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ABSTRACT

This packet contains an instructor's guide, student task sheets, and an illustrated vocabulary list for a program in automotive technology for handicapped students (special vocational education). The instructor's guide consists of a matrix of modules with vocabulary divided into 30 units of study for Auto Mechanics I and 17 units for Auto Mechanics II; suggestions for using student task sheets; a list of supplemental resources; and an index of all vocabulary words used in the program. Each of the student task sheets for levels I and II includes an introduction, performance objective, earning activities, additional activities, and a crossword. Units cover vocabulary for the 47 units of study of the auto mechanics I and II program. Included in the student task sheets are illustrated lists of all vocabulary words introduced in the units. (KC)

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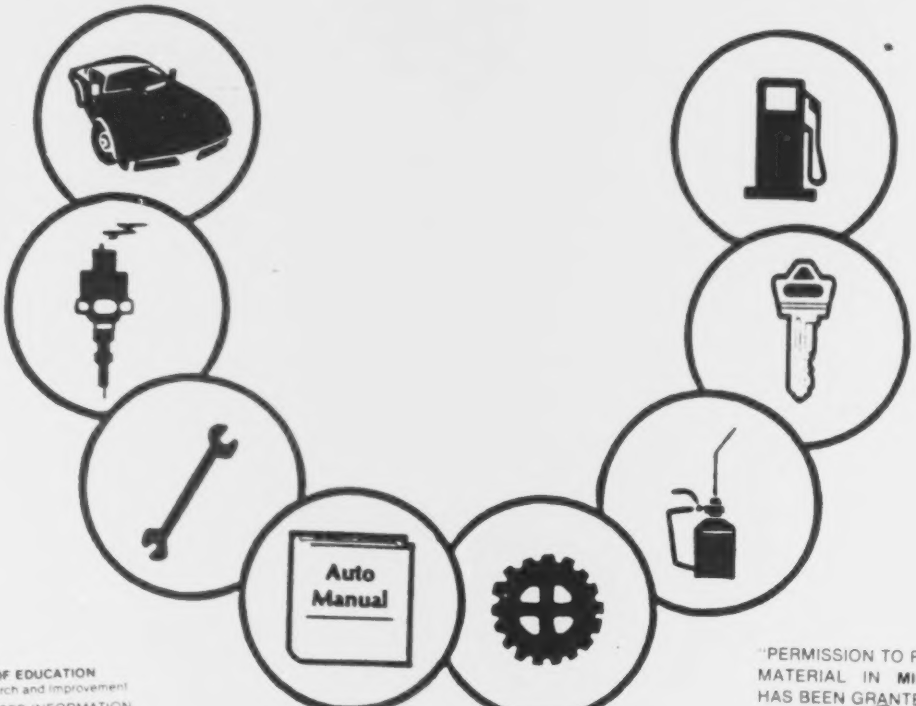
Special Vocational Education

LIAISON PROGRAM FOR AUTOMOTIVE TECHNOLOGY



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Liaison Program
for
Handicapped Students

Joan Martin, Project Director
Sandra Buenahora, Graduate Assistant
Donna Perry, Artist

Developed by
Center for Career and Vocational Teacher Education
Western Kentucky University
Bowling Green, KY 42101

for

Kentucky Department of Education

1990

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AUTO MECHANICS

Vocabulary

CONTENT

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1	Matrix	- Modules with vocabulary units in this material
4	List of Vocabulary	- Divided into 30 units of study for Auto Mechanics I and 17 units of study for Auto Mechanics II - Subdivided according to student task sheets - * Words related to unit but defined in earlier unit
17	Suggestions for Student Task Sheets	- Student learning style - Ideas for using activity sheets - About the materials
19	Additional Resources	- List of available supplemental material
20	Index	- Alphabetical listing of all vocabulary words

AUTO MECHANICS I

MATRIX

Vocabulary Units and Modules

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4	Inspecting and Replacing Points and Condensers	9
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19	Changing Engine Oil and Filter	33
20	Removing and Replacing Cylinder Head	36
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AUTO MECHANICS II

Vocabulary Units and Modules

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AUTO MECHANICS I

TECHNICAL TERMINOLOGY

AM-1 BATTERIES

p.5 accessories
alligator clips
ammeter
ampere
battery acid

p.7 charger
conductor
corrode
density
discharge

p.9 electrolyte
excessive
frayed
hydrometer
malfunction

p.11 ratio
refractometer
specification
sulfuric acid
terminal

p.13 vehicle
ventilated
visually inspect
voltage
voltmeter

AM-2 GENERATORS / ALTERNATORS

p.5 align
alternators
amperage
armature
components

p.7 diode
generator
ground terminal
ignition switch
inertia

p.9 jumper lead
load capacity
mallet
open circuit
polarized

p.11 radio condenser
reverse
spacer
tension
tension gauge

p.13 torque
torque wrench
vibration
vise

AM-3 REPAIRING STARTERS

p.5 battery ground cable
brushes
commuter
disassemble
drive housing

p.7 end-frame
energized
field coil
gear teeth
growler

p.9 insulation
internal
laminations
over-running clutch
parallel

p.11 pinion
resistance
revolutions
rivet
retainer

p.13 RPM indicator
shaft
shift lever
snap ring
solenoid

AM-3 REPAIRING STARTERS

p.15 solvent
V-blocks
* ammeter
armature
specifications
voltmeter

AM-4 POINTS AND CONDENSERS

p.5 arcing
ballast resistor
breaker plate
breaker points
calibrate

p.7 cam
capacity
centrifugal
condenser
distributor

p.9 dwell
dwell meter
hex key
idle
ignition

p.11 ignition coil
micro
microfarads
ohmmeter
oscilloscope

p.13 pivot pin
points
primary wire
resistor
rotor

p.15 tachometer
tolerance
* align
alligator clips
condenser
lubricant
resistance
retainers
specifications

AM-5 SET IGNITION TIMING

p.5 abnormal
choke
depress
diaphragm
disconnect

p.7 dual diaphragm vacuum advance unit
ignition timing
piston
portable
procedure

p.9 RPM
TDC
thermal
vacuum hose
vibration damper
* align
centrifugal
compression
distributor
excessive
specifications
tachometer
vehicle

AM-6 MAINTAINING SPARK PLUGS

p.5 aluminum
blast jet
brittle
carbon
compressed air

p.7 defective
deposit fouling
gap
install
oil fouling

p.9 ratchet
regapping
spark plug
threaded
turbulence
* components
solvent
torque

AM-7 PRIMARY IGNITION CIRCUITS

p.5 bypass circuit
original
primary circuit
secondary circuit
* ballast resistor
condenser
distributor
ignition
ignition coil
ignition switch
ignition system
malfunction
resistor
specification
visually inspect
voltmeter

AM-8 MAINTAINING FUEL FILTER

p.5 bronze
carburetor
ceramic
filter
flare-nut wrench

p.7 foreign
fuel pump
jets
periodic
pleated

p.9 residue
sintered bronze
volume
* capacity
component
reverse
solvent
vehicle
ventilated

AM-9 CARBURETOR AIR CLEANER

p.5 accelerate
air cleaner
chamber
combustion
damper

p.7 emission
exhaust
external
intake manifold
linkage

p.9 maximum
performance
pollutant
sensor
snorkel

p.11 temperature sensor
*diaphragm
foreign
internal
vacuum hoses
visually inspect

AM-10 FUEL LINES AND HOSES

p.5 burrs
compression
flare
flexible
neoprene
porous

p.3 precaution
ream
siphon
* battery ground cable
carburetor
defective
malfunction
vehicle
vibration

AM-11 FUEL PUMP

p.2 combination
contamination
crankcase
fire extinguisher
fuel pump
gasket

p.3 gravity
mechanic's stethoscope
rupture

AM-11 **FUEL PUMP**

serviceable

p.9 vapor
* alignment
diaphragm
external
malfunction
specifications

AM-12 **CARBURETOR**

p.3 carburetor float bowl
flare-nut wrench
throttle
* carburetor
defective
disconnect
gasket
install
linkage
malfunction
manifold
RPM
tachometer

AM-13 **COOLING SYSTEM**

p.3 adapter
antifreeze
cooling system
cross flow
dissipate

p.5 ethylene glycol
Fahrenheit
hydrometer
methanol
premature

p.7 pressurized
radiator
reservoir
solution
thermometer
* component
specification
thermostat
vehicle

AM-14 **HOSES/THERMOSTATS/CORE PLUGS**

p.5 core plug
deterioration
thermostat
* bleed
brittle
coolant
defective
disconnect
excessive
gasket
malfunction
radiator
thermostat
vehicle

AM-15 **COOLING SYSTEM COMPONENTS**

p.5 ball bearing
bimetallic
fan clutch unit
operational
spiral

p.7 variation
water pump
* brittle
chamber
clutch
cooling system
components
defective
deterioration
gasket
radiator
thermostat

AM-16 **EXHAUST COMPONENTS**

p.5 assemblies
carbon monoxide
chassis
counterweight
exhaust manifold

AM-16 EXHAUST COMPONENTS

p.7 exhaust pipe
exhaust system
extractor
flange
inoperative

p.9 muffler
penetrate
pneumatic
sever
tail pipe

p.11 vacuum gauge
warped
* accelerate
combustion
components
deterioration
excessive
gaskets
internal
manifold
vehicle

AM-17 TESTING COMPRESSION

p.5. analyzing
cylinder
diagnosing
displacement
distributor cap

p.7 exhaust valve
gauge
intake valve
minimum
piston rings

p.9 pressure
* abnormal
carburetor
compression
cylinder
flexible
gasket
malfunction
precaution

AM-18 ENGINE LUBRICATION

p.5 bearing
bypass valve
dilution
oil pump
oil seals

p.7 plunger
rotary
* crankcase
diagnose
dipstick
excessive
external
gaskets
gauge
internal
lubrication
malfunction
vertical

AM-19 ENGINE OIL AND FILTER

p.5 dipstick
frequency
full flow oil filter
lubricant
lubricate

p.7 oil filter
oxidation
viscosity
* crankcase
gasket
lubricate
vehicle
viscosity

AM-20 CYLINDER HEAD

p.5 cylinder head
diagonal
feeler gauge
push rods
rocker arm

p.7 sequence

AM-20 CYLINDER HEAD

studs
torque specification
* aluminum
corrosion
exhaust manifold
gaskets
intake manifold
maximum
original
procedure
specification
torque
vacuum
ventilation

AM-21 UNIVERSAL JOINTS

p.5 audible
circumference
dial indicator
differential
drive shaft

p.7 exerted
mechanical vibrations
perpendicular
pinion angle gauge
propeller shaft

p.9 splines
transmission
universal joints
wheel hop
yoke
* accessory
align
distortion
flange
hoist
lubricated
malfunction
pinion
torque

AM-22 AUTOMATIC TRANSMISSIONS

p.5 automatic transmission
bell housing
detent
extension
fluid pressure

p.7 manual linkage
manual transmission
modulator
neutral
O-ring

p.9 quadrant
servo
selector shaft seal
* gasket
intake manifold
linkage
malfunction
precaution
TRS
vehicle

AM-23 BRAKE PERFORMANCE

p.5 abutments
anchor pin
backing plate
brake drum
brittleness

p.7 caliper
chafe
contaminant
disc brakes
equalize

p.9 hydraulic brake
lug nut
master cylinder
OSHA
piston dust boots

p.11 rotor
sediment
steering knuckle
tire pressure gauge
* feeler gauge
maximum
micrometer
minimum
reservoir
specification

AM-24 HYDRAULIC BRAKE SYSTEM

p.3 bleeding
disconnect
flare
manually
power booster

p.5 wheel cylinder
* bleed
calipers
hydraulic brake
master cylinder
pressure
vehicle

AM-25 DRUM BRAKE COMPONENTS

p.3 boss
brake lining
brake shoes
defective
drum brake

p.5 primary brake shoe
secondary brake shoe
* backing plates
component
cylinder
malfunctions
specification
vehicle

AM-26 MASTER AND WHEEL CYLINDERS

p.5 clevis
flare-nut wrench
master cylinder push rod
retaining clip
* assemblies
bleed
component
contaminated
defective
disconnect
exterior
master cylinder
precaution
procedures
wheel cylinder

AM-27 DISC BRAKE COMPONENTS

p.5 assemble
brake fade
cotter pin
crocus cloth
dust boot
* abutments
component
depress
disc brake
distortion
external
feeler gauge
gasket
interior
internal
* lubricate
malfunction
master cylinder
O-ring
piston
reservoir
retaining clips
rotor
steering knuckle
tolernace
torque
vehicle
vibration
vise

AM-28 SHOCK ABSORBERS

p.5 bushing
C-clamp
drift pin punch
hex
mounts

p.7 oscillation
shock absorber
sleeve
suspension
vertical
* boss
chassis
cotter pin
maximum
original
suspension
vehicle

AM-29 MANUAL STEERING GEAR

p.3 cross shaft
shimmy
spline
worm gear
* alignment
bushing
chassis
excessive
flange
hoist
linkage
lubricate
malfunction
manual
vehicle

AM-30 POWER STEERING PUMPS

p.5 seepage
torque wrench
* adapter
component
crocus cloth
defective
disconnect
excessive
external
malfunction
maximum
O-ring
reservoir
torque specification
vehicle

AUTO MECHANICS II

AM-31 INSPECTING LIGHTING SYSTEM

p.5 concealed
eterior
malfunction
temporarily
visually inspect

p.7 lighting system
back-up lights
brake lights
clearance lights
courtesy lights

p.9 headlights
parking lights
tail lights
turn signal lights
license plate lights

p.11 control switch
vehicle

AM-32 SERVICING LIGHTING SYSTEM

p.5 head lamp lenses
bezels
headlight aimer
mechanical-type aimers
visibility

p.7 equalize
maximum
obstructing
protruding
specification

AM-33 COMPONENTS AND FLASHER UNITS

p.5 flasher
directional flasher lights
emergency flasher lights
dimmer switch
ground circuit

p.7 component
defective
corrosion
chafe
inoperative

p.9 fuse box
ohmmeter
voltage regulator
short circuit
open circuit

AM-34 ASSEMBLY FUSE BOX

p.5 battery ground cable
battery post
consistently
disconnect
fuse retaining spring clips

p.7 humidity
oxidize
reconnect
terminal
wiring harness
* corrode
fuse box
malfunction
ohmmeter
specifications
vehicle

AM-35 ANALYZE FUEL SYSTEM

p.5 air cleaner
air horn
carburetor
carburetor bowl cover
compressed air

p.7 contamination
emission
fire extinguisher
float baffle
fuel pump

AM-35 ANALYZE FUEL SYSTEM

p.9 fuel system
gauge wire
grommet
interior
link

p.11 metering rod
purge
rollover check valve
syphon
tachometer

p.13 throttle plate
vacuum hose
transducer
ventilation
venturi

p.15 volatile

AM-36 EXHAUST EMISSION CONTROLS

p.5 CO
CTO
ESC
ppm
RPM

p.7 TCS
TRS
hydrocarbons (HC)
emission control system
emissions analyzer

p.9 combustion
spark control system
deceleration valve
distributor vacuum advance
manifold vacuum

p.11 solenoid valve
vacuum
vacuum gauge
energized
infra-red exhaust analyzer

p.13 oxides of nitrogen (NOx)
tees
* malfunction
neutral
tachometer

AM-37 MANIFOLD HEAT CONTROLS

p.5 exhaust manifold
intake manifold
accelerate
detonation
snorkel

p.7 heat raiser valve
aerosol
bimetallic
counterweight
frozen

p.9 interval
periodic
shaft
solvent
* carburetor
vehicle

AM-38 COOLING SYSTEM

p.5 cooling system
coolant
antifreeze
radiator
radiator fins

p.7 thermostat
flush
flushing gun cone
pressure flushing
reverse flushing

p.9 operating
aluminum
engine inlet hose
excessive
external

p.11 stant tester
* maximum
temporarily
vehicle
visual inspection

AM-39 REMOVE ENGINE

p.5 chafe marks
exhaust pipe
extension
hoist
hydraulic jack

p.7 linkages
metal fatigue
motor mounts
neoprene
torque specifications

p.9 vibration
* component
transmission jack
vehicle

AM-40 CLEAN ENGINES

p.5 caustic
distributor
fusible links
lacquer
low flash point

p.7 lubricant
saturated
steam cleaner
swab
toxic

p.9 vapor
* carburetor
contamination
excessive
exterior
interior
solvent
suspension
vehicle
ventilation
volatile

AM-41 DISASSEMBLE ENGINES

p.5 accessory
alignment
air impact wrench
camshaft
cylinder heads

p.7 disassemble
flywheel
harmonic balancer
horizontal
interchanged

p.9 keepers
pistons
push rods
reverse
ridge reamer

p.11 ring ridge
rocker arm
spring retainers
TDC
tappets

p.13 timing gear
torque
valve spring compressor
vertical
* alternator
carburetor
crank shaft
distributor
exhaust manifolds
fuel pump
intake manifold
internal
vibration

AM-42 TEST MANUAL TRANSMISSIONS

p.5 bell housing
clevis
clutch
manual transmission
shift rods

p.7 transmission
transmission mounts
yoke
* accelerate
decelerate
disassemble
exterior
external
hoist
internal
lubricant
malfunction

AM-42 **TEST MAMUAL TRANSMISSIONS**

neutral
vehicle
visually inspect

AM-43 **REPLACE MANUAL TRANSMISSION**

p.5 clutch disc
differential
drive shaft
extension
flywheel housing

p.7 housing
minimum
* hoist
lubricant
manual transmission
motor mounts
transmission jack
transmission mounts
vibration

AM-44 **SPEEDOMETERS**

p.5 speedometer cable
speedometer cable housing
speedometer drive pinion
transmission output shaft pinion

p.7 cog wheel
adapter
ferrule
graphite grease
O-ring

p.9 erratic
flexible
ratio
* excessive
housing
interior
lubricant
transmission

AM-45 **PARKING BRAKES**

p.5 brake drum
parking brake lever
brake shoe
primary brake shoe
secondary brake shoe

p.7 brake bands
parking brake linkages
drive line parking brakes
engage
actuated

p.9 conduits
compress
disconnect
frayed
oxidized wire

p.11 retaining clip
strut
* defective
external
flexible
hoist
internal
linkages
lubricant
solvent
transmission output shaft
vehicle

AM-46 **AIR CONDITIONING CONTROLS**

p.5 deflected
diverted
double action vacuum door
heater control valve
mode doors

p.7 partial
plenum
pneumatic
ports
posi-grip

p.9 refrigerant
temperature door
vacuum control device
valve
* humidity

AM-46 AIR CONDITIONING CONTROLS

partial
throttle valve

AM-47 HEATER CORE AND HOSES

p.5 defroster hose
duct
fins
heater core
inlet tubes

p.7 outlet tubes
solder
vicinity
* defective
interior
malfunction
thermostat
vehicle

AUTO MECHANICS

Vocabulary

SUGGESTIONS FOR STUDENT TASK SHEETS

PURPOSE AND OBJECTIVES

To provide support tutorial reading material for Liaison teachers to use with Auto Mechanics students in state vocational-technical schools and in vocational area centers specifically to:

1. teach work-related terminology
2. allow flexibility of usage by the teacher/tutor
3. present a format that is highly visual with a readability level of 3-5 and minimal written instructions.

STUDENT LEARNING STYLE

Visual	- Student reads or views material - Student can work alone
Oral	- Student hears or says information - Student works with another person
Kinesthetic	- Student manipulates material - Student can work alone or with another person

Match the learning activity to the student's learning style.

IDEAS FOR USING ACTIVITY SHEETS

Visual	- Use the Study Sheets "as is." - Make study cards (flash cards) from the Study Sheets (see 'Kinesthetic' for instructions). - Make study cards (flash cards) in Units with cards provided.
Oral	- With all activities: read the instructions to the student, say the vocabulary word to the student, and read the definition to the student.
Kinesthetic	- Make study cards (flash cards) from the Study Sheets 1. Make one or two copies of the Study Sheets, depending on the activity. 2. For making flash cards, cut the rows on solid lines, cut the visual off, and fold the remaining part of row in half. Paste or tape together. Repeat for each row.

ACTIVITIES

1. Flash cards - self-study or with someone
2. Matching - match word cards with definition cards (arranged in two columns)
    - match word cards with visuals
    - mix and match
    - match word cards with combined strip of definitions and visuals

ABOUT THE MATERIALS

Task instructions are written to help the teacher work through the assignment with the student. The Task Assignment Sheets were not written on a 3-5 grade readability level.

Each vocabulary word is divided into syllables according to pronunciation, with the pronunciation emphasis underlined. Pronunciation symbols of phonic spelling could be confusing to some students and so they have not been included. (It is assumed that the teacher will be helping the student with pronunciation.)

Vocabulary

ADDITIONAL RESOURCES

Vocational Preparation Curriculum: Auto Service
University of Missouri - Columbia
Instructional Materials Laboratory

Specifically developed for disadvantaged and/or handicapped students.
21 units. Purchase price: approximately $16.00. Available for loan through the WKU Special Needs Library, 404 CEB.

English as a Second Language/Automotive Mechanic
Gateway Technical Institute

Developed for students with limited English skills, the material includes reading, writing, speaking/listning and interpersonal relations. Available for loan through the WKU Special Needs Library, 404 CEB.

Vocational Vocabulary Module: Auto Service
University of Missouri - Columbia

Five slide sets and five audio cassettes for learning the technical vocabulary. Includes support material. Purchase price: approximately $80.00. Available for loan through the WKU Special Needs Library, 404 CEB.

Puzzles and Posters
MECC, 3490 Lexington Avenue North, St. Paul, MN 5511

Computer disk includes three programs: 1) Word Find (You type the list of words and the program prints it in a block of letters plus the answer key); 2) Crossword Puzzles (You type the list of clues and choose preferred format and the program prints the puzzle plus the answer key); 3) Blockletters (You type the word and the program prints it in large, banner size letters). Available for Apple, Radio Shack, IBM or Commodore. Printer needed. Purchase price: $44.00.

Automobile Maintenance Reading and Language Activities
New Jersey Vocational Technical Curriculum Laboratory

Reading and language activities for special needs students. Activities include: the main idea, meaning from context, true/false, completion, vocabulary/spelling, word find, puzzles.

Available for loan through the WKU Special Needs Library, 404 CEB.

AUTO MECHANICS

abnormal 5-5
abutments 23-5
accelerate 9-5, 37-5
accessories 1-5, 41-5
actuated 45-7
adapter 13-3, 44-7
aerosol 37-7
air cleaner 9-5, 35-5
air horn 35-5
air impact wrench 41-5
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alignment 41-5
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blast jet 6-5
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boss 25-3
brake bands 45-7
brake drum 23-5, 45-5
brake fade 27-5
brake lights 31-7
brake shoes 25-3, 45-5
breaker plate 4-5
breaker points 4-5
brittle 6-5
brittleness 23-5
bronze 8-5
brushes 3-5
burrs 10-5
bushing 28-5
bypass circuit 7-5
bypass valve 18-5
C-clamp 28-5
calibrate 4-5
caliper 23-7
cam 4-7
camshaft 41-5
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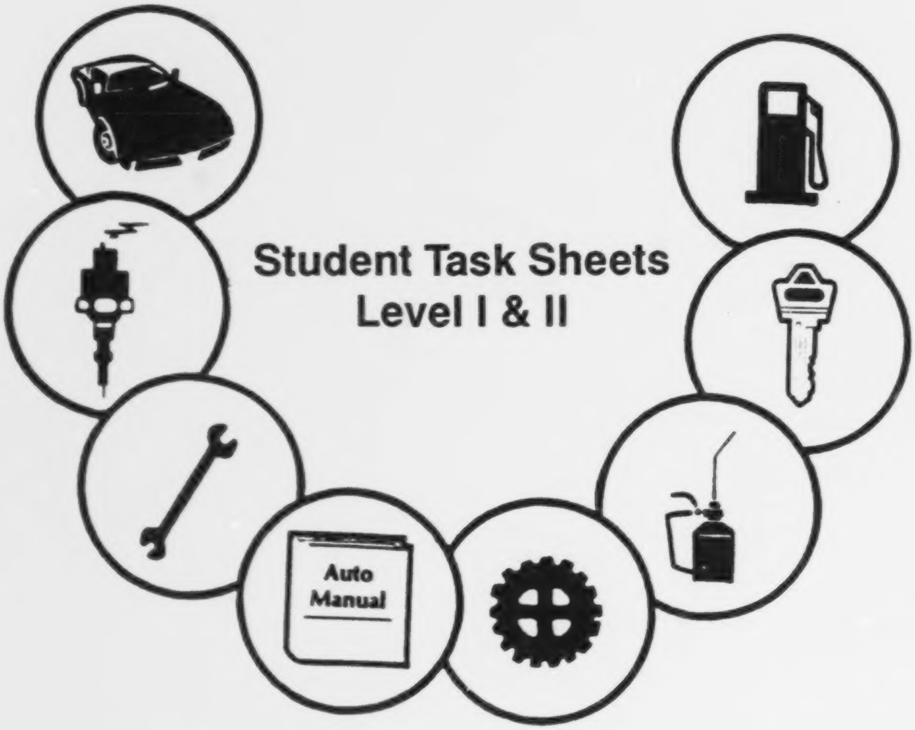
Special Vocational Education

LIAISON PROGRAM FOR AUTOMOTIVE TECHNOLOGY



Student Task Sheets
Level I & II

Office of Secondary Vocational Education
Kentucky Department of Education

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Liaison Program for Handicapped Students

Joan Martin, Project Director
Sandra Buenahora, Graduate Assistant
Donna Perry, Artist

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LEARNING WORDS USED IN SERVICING AND REPLACING BATTERIES

INTRODUCTION

The storage battery is the primary source of electricity for starting the engine. It also acts as a back-up supply of electricity for running the engine and accessories. Larger batteries are required in vehicles with big engines or numerous electrical accessories. A properly maintained battery should be kept clean, charged, filled with electrolyte, and secure in the battery box. In this unit you will learn the technical vocabulary related to servicing batteries.

PERFORMANCE OBJECTIVE

You will match 25 words used in servicing and replacing batteries with their definitions. Your teacher will provide a list of words and definitions. You should match at least 20 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

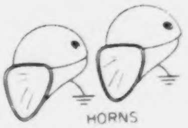
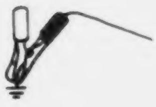
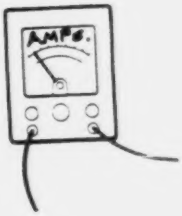
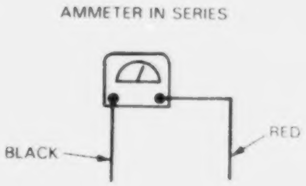
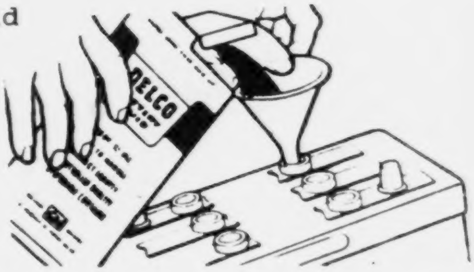
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

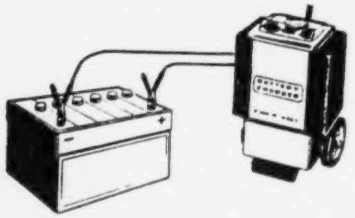
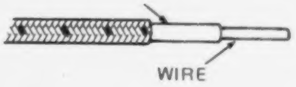
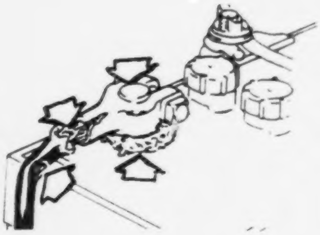
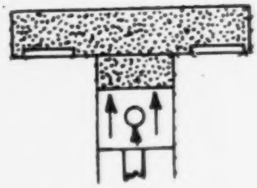
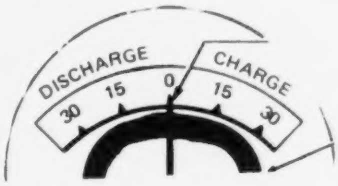
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

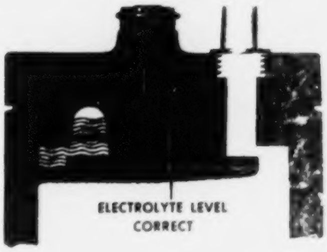
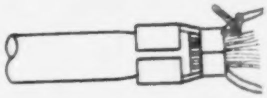
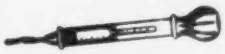
SERVICING AND REPLACING BATTERIES

accessories (ac ces so ries)	something added on	
alligator (al li ga tor) clips (clips)	a tool that has strong jaws that are toothed	
ammeter (am me ter)	**an instrument that measures the flow of electricity**	
ampere (am pere)	a measure of how much electricity is flowing	 AMMETER IN SERIES BLACK RED
battery acid (bat ter y ac id)	a mixture of sulfuric acid and water in a battery	

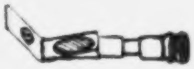
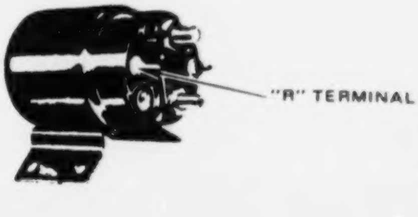
SERVICING AND REPLACING BATTERIES

charger (charg er)	a device used to pass electricity through the battery to give it energy again	
conductor (con duc tor)	material that provides a path for electric current to flow	
corrode (cor rode)	removal of surface materials by chemical action	
density (den si ty)	how tightly packed material is	
discharge (dis charge)	the loss of electric current from a battery	

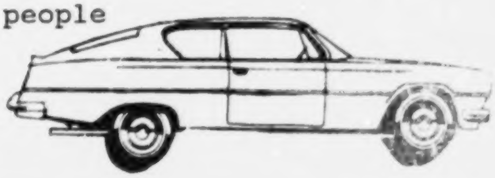
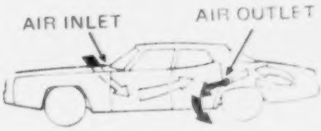
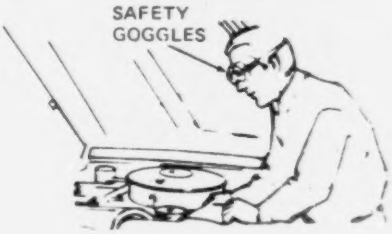
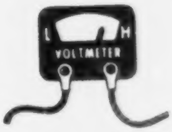
SERVICING AND REPLACING BATTERIES

electrolyte (e lec tro lyte)	the 60% water and 40% sulfuric acid mixture in a battery	
excessive (ex ces sive)	more than enough	
frayed (frayed)	worn away at the edge in a ragged pattern	
hydrometer (hy drom e tor)	a float device to determine the state of charge in a battery	
malfunction (mal func tion)	does not work correctly	

SERVICING AND REPLACING BATTERIES

ratio (ra tio)	the number of times one thing is smaller or larger than another	
refractometer (re frac tom e ter)	a tool used to find how much charge a battery cell has	
specification (spec i fi ca tion)	information of design details, supplying size, quantity, performance, etc.	
sulfuric acid (sul fur ic ac id)	an acid that is strong, oily, and wears away material	
terminal (ter mi nal)	the junction where wires attach to make electricity flow	

SERVICING AND REPLACING BATTERIES

vehicle (ve hi cle)	a device for carrying people or objects	
ventilated (ven ti lated)	allows air to move through or around	 AIR INLET AIR OUTLET
visually (vis ual ly) inspect (in spect)	examine carefully while looking for wear or the cause of failure	 SAFETY GOGGLES
voltage (volt age)	the force that makes electricity flow in a conductor	
voltmeter (volt me ter)	an instrument used to measure volts	 L H VOLTMETER

BATTERIES

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V I S U A L L Y I N S P E C T D U O L O X
D I S T R I B U T O R C O N D U C T O R E
L Z S U L F U R I C A C I D V O L T A G E
B A T T E R Y A C I D C Y L I N D E R R N
D I S P L A C E M E N T D E N S I T Y W C
H K S P Z F R A Y E D A M P E R E P R Y T
H Y D R O M E T E R V E H I C L E S D J Z
W E X C E S S I V E D I P S T I C K H N S
S P E C I F I C A T I O N C A R B O N Z I
R E F R A C T O M E T E R A T I O Q P G Z
F N W L K F V O L T M E T E R Z F W F L M
C H A R G E R N A C C E S S O R I E S N M
E L E C T R O L Y T E V E N T I L A T E D
K C T H E R M O M E T E R C O R R O D E S
W D I K S Y L U B R I C A N T H T A I O I
D I S C H A R G E A M M E T E R L O Q Q Q
C X S U N G Q W O L O K C S O X D N W T T
H B F E C A L L I G A T O R C L I P S L S
M A L F U N C T I O N S T E R M I N A L S
```

Can you find these words?

VISUALLY INSPECT
SPECIFICATION
DISPLACEMENT
DISTRIBUTOR
VENTILATED
TERMINALS
ACCESSORIES
ELECTROLYTE

ALLIGATOR CLIPS
REFRACTOMETER
THERMOMETER
BATTERY ACID
HYDROMETER
LUBRICANT
AMPERE
CONDUCTOR

FRAYED
RATIO
AMMETER
DENSITY
DIPSTICK
DISCHARGE
VOLTMETER
EXCESSIVE

CHARGER
CARBON
SULFURIC ACID
CORRODE
VOLTAGE
MALFUNCTIONS
CYLINDER
VEHICLES

ACROSS

BATTERIES

ANSWER KEY

```
V I S U A L L Y I N S P E C T . . . . . .
D I S T R I B U T O R C O N D U C T O R .
. . S U L F U R I C A C I D V O L T A G E
B A T T E R Y A C I D C Y L I N D E R . .
D I S P L A C E M E N T D E N S I T Y . .
. . . . . F R A Y E D A M P E R E . . . .
H Y D R O M E T E R V E H I C L E S . . .
. E X C E S S I V E D I P S T I C K . . .
S P E C I F I C A T I O N C A R B O N . .
R E F R A C T O M E T E R A T I O . . . .
. . . . . . V O L T M E T E R . . . . . .
C H A R G E R . A C C E S S O R I E S . .
E L E C T R O L Y T E V E N T I L A T E D
. . T H E R M O M E T E R C O R R O D E .
. . . . . . L U B R I C A N T . . . . . .
D I S C H A R G E A M M E T E R . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . A L L I G A T O R C L I P S . .
M A L F U N C T I O N S T E R M I N A L S
```

BATTERIES

J S P E C I F I C A T I O N H C O B Y L X
R G D W I N A C Y L I N D E R A Y D K U C
B A T T E R Y A C I D K I N A R O D S B V
E C V E N T I L A T E D S D D B C Z H R O
D C R L U E K L N R K W P A Q O L E R I L
L E Q E T R V I S U A L L Y I N S P E C T
N S K C Y M A G U R C H A R G E R Z F A M
I S G T R I M A L F U N C T I O N S R N E
T O S R O N M T F Z A D E N S I T Y A T T
P R D O H A E O U V H A M P E R E I C R E
S I T L D L T R R O T H E R M O M E T E R
G E D Y I S E C I L P E N L R A T I O D I
D S I T S G R L C T W Z T X E Q I F M N C
S P P E C F I I A A I O N N F R A Y E D O
Z Y S H H C N P C G K D C O N D U C T O R
F H T T A F N S I E E X C E S S I V E S R
O G I S R C A P D I S T R I B U T O R L O
M G C A G W H Y D R O M E T E R U W Y Q D
C P K V E H I C L E S M P D D R W S Y C E

Can you find these words?

VISUALLY INSPECT
SPECIFICATION
DISPLACEMENT
DISTRIBUTOR
VENTILATED
TERMINALS
ACCESSORIES
ELECTROLYTE

ALLIGATOR CLIPS
REFRACTOMETER
THERMOMETER
BATTERY ACID
HYDROMETER
LUBRICANT
AMPERE
CONDUCTOR

FRAYED
RATIO
AMMETER
DENSITY
DIPSTICK
DISCHARGE
VOLTMETER
EXCESSIVE

CHARGER
CARBON
SULFURIC ACID
CORRODE
VOLTAGE
MALFUNCTIONS
CYLINDER
VEHICLES

ACROSS/DOWN

BATTERIES

ANSWER KEY

```
. S P E C I F I C A T I O N . C . . . L .
. . . . . . . C Y L I N D E R A . . . U .
B A T T E R Y A C I D . I . . R . . . B V
. C V E N T I L A T E D S . . B . . . R O
. C . L . E . L . . . . P . . O . . R I L
. E . E . R V I S U A L L Y I N S P E C T
. S . C . M A G U . C H A R G E R . F A M
. S . T . I M A L F U N C T I O N S R N E
. O . R . N M T F . . D E N S I T Y A T T
. R . O . A E O U V . A M P E R E . C . E
. I . L D L T R R O T H E R M O M E T E R
. E D Y I S E C I L . . N . R A T I O . .
. S I T S . R L C T . . T . . . . . M . C
S P P E C . . I A A . . . . F R A Y E D O
. . S . H . . P C G . . C O N D U C T O R
. . T . A . . S I E E X C E S S I V E S R
. . I . R . . . D I S T R I B U T O R . O
. . C . G . H Y D R O M E T E R . . . . D
. . K V E H I C L E S . . . . . . . . . E
```

BATTERIES

R V E H I C L E S O U M Y O U S Y V Z P M

N E L E C T R O L Y T E P N F E P C O H A

Y N F S C N V B A T T E R Y A C I D Q O L

H T E R U Y V D K Q W O Q L M E N I R R F

Q I P J A L L I G A T O R C L I P S E C U

O L G C F C F I S P E C I F I C A T I O N

C A R B O N T U N U C O R R O D E R D N C

H T S K I K G O R D A U Z E G M Q I I D T

D E N S I T Y M M I E L J A O L A B S U I

E D I P S T I C K E C R L M M V C U P C O

K U L U B R I C A N T A R Y P P C T L T N

S G G D I S C H A R G E C A I I E O A O S

C V A Z V D T M O G H L R I K N S R C R Q

N G B V O L T M E T E R A T D O S U E U G

Z I X P L X I R A T I O S V P D O P M K S

A M M E T E R H Y D R O M E T E R W E D B

A B C H A R G E R W D I D R B Q I G N C C

X V H Z G V M R E X C E S S I V E U T E T

F R A Y E D I T T E R M I N A L S B Y O X

Can you find these words?

VISUALLY INSPECT
SPECIFICATION
DISPLACEMENT
DISTRIBUTOR
VENTILATED
TERMINALS
ACCESSORIES
ELECTROLYTE

ALLIGATOR CLIPS
REFRACTOMETER
THERMOMETER
BATTERY ACID
HYDROMETER
LUBRICANT
AMPERE
CONDUCTOR

FRAYED
RATIO
AMMETER
DENSITY
DIPSTICK
DISCHARGE
VOLTMETER
EXCESSIVE

CHARGER
CARBON
SULFURIC ACID
CORRODE
VOLTAGE
MALFUNCTIONS
CYLINDER
VEHICLES

ACROSS/DOWN/DIAGONAL

BATTERIES III

ANSWER KEY

```
R V E H I C L E S . . . . . . . . . . . M
. E L E C T R O L Y T E . . . . . . . . A
. N F S C . . B A T T E R Y A C I D . . L
. T . R U Y V . . . . . . . . . . I . R F
. I . . A L L I G A T O R C L I P S E C U
. L . . . C P I S P E C I F I C A T I O N
C A R B O N T H N U C O R R O D E R D N C
. T . . . . . O U D A . . . . M . I I D T
D E N S I T Y . M R E L . A O . A B S U I
. D I P S T I C K E I R L M M . C U P C O
. . L U B R I C A N T C R Y . P C T L T N
. . . D I S C H A R G E A . I . E O A O S
. . . . V . . . . . H . R C . N S R C R .
. . . V O L T M E T E R A T I O S . E . .
. . . . L . . R A T I O S . . D O P M . .
A M M E T E R H Y D R O M E T E R . E . .
. . C H A R G E R . . . . . . . I . N C .
. . . . G . . . E X C E S S I V E . T . T
F R A Y E D   . T E R M I N A L S . . . .
```

BATTERIES I

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	2	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	3	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	4														XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX
XX XX	6											XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX
XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS

4. a tool that has strong jaws that are toothed (2 words)
6. something added on

DOWN:

1. machine used to pass electricity through the battery to give it energy again
2. a measure of how much electricity is flowing
3. a mixture of sulfuric acid and water in a battery (2 words)
6. a tool that measures the flow of electricity

BATTERIES I

ANSWER KEY

ACROSS		DOWN	
4.	ALLIGATORCLIPS	1.	CHARGER
6.	ACCESSORIES	2.	AMPERE
		3.	BATTERYACID
		6.	AMMETER

```
                      C
                      H
                      A
                      R
                      G       A
      B               E       M
      A L L I G A T O R C L I P S
      T                       E
      T                       R
A C C E S S O R I E S         E
M     R
M     Y
E     A
T     C
E     I
R     D
```

BATTERIES II

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	3									XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	4									XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	5									XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

3. more than enough
4. the flow of electricity from a battery
5. something that makes a path for a flow of electric current

DOWN:

1. the acid mixture in a battery cell
4. how packed tightly something is

AM-1-24

BATTERIES II

ANSWER KEY

ACROSS:			DOWN:		
	3.	EXCESSIVE		1.	ELECTROLYTE
	4.	DISCHARGE		4.	DENSITY
	5.	CONDUCTOR			

```
                    E

                    L

                    E

                E X C E S S I V E

                    T

D I S C H A R G E   R

E                 C O N D U C T O R

N                   L

S                   Y

I                   T

T                   E

Y
```

BATTERIES III

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	2	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	3	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	4													XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	5												XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
7										XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

4. a tool used to find how much charge a battery cell has
5. not working
7. a tool to measure the gravity of liquids

DOWN:

1. the difference in numbers of two things that are almost alike
2. worn away at the edge
3. a certain plan

BATTERIES III

ANSWER KEY

ACROSS:
4. REFRACTOMETER
5. MALFUNCTIONS
7. HYDROMETER

DOWN:
1. RATIO
2. FRAYED
3. SPECIFICATION

```
                          R   F

                          A   R

              S           T   A

              P           I   Y

            R E F R A C T O M E T E R

              C               D

              I

        M A L F U N C T I O N S

              I

              C

              A

H Y D R O M E T E R

              I

              O

              N
```

BATTERIES IV

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	2	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
3										XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	4	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	6															XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	7								XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	8												XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

3. air can move through
6. to look closely (2 words)
7. something that carries people
8. an acid that is strong, oily, and wears away material (2 words)

DOWN:

2. the points where wires join to make electricity flow
4. a tool used to measure the difference in volts
7. the pressure of electricity that makes it flow

BATTERIES IV

ANSWER KEY

ACROSS:
3. VENTILATED
6. VISUALLY INSPECT
7. VEHICLES
8. SULFURIC ACID

DOWN:
2. TERMINALS
4. VOLTMETER
7. VOLTAGE

```
                T
V E N T I L A T E D             V
                R               O
                M               L
                I               T
                N               M
        V I S U A L L Y I N S P E C T
                L               T
                S   V E H I C L E S
                    O           R
                    L
                    T
    S U L F U R I C A C I D
                    G
                    E
```

LEARNING WORDS USED IN REPLACING GENERATORS AND ALTERNATORS

INTRODUCTION

There are many different generators and alternators just as there are different automobile models and production-year designs. Each generator or alternator must be matched to its component regulator, or serious charging system damage may occur. The experienced mechanic must be able to identify charging system components, locate the proper service manuals, and make adjustments or replacements according to specifications. In this unit you will learn the technical vocabulary related to generators and alternators.

PERFORMANCE OBJECTIVES

You will match 24 words used in replacing generators and alternators with their definitions. Your teacher will provide a list of words and definitions. You should match at least 19 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the definitions in your own words. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another.

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

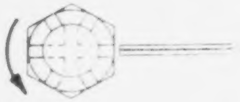
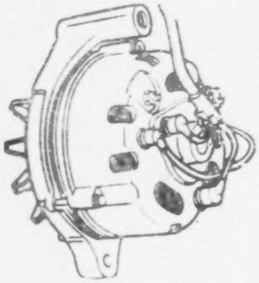
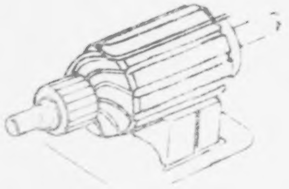
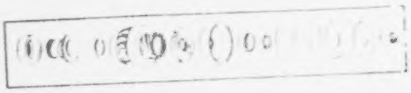
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

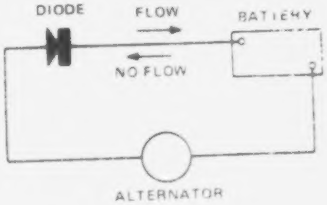
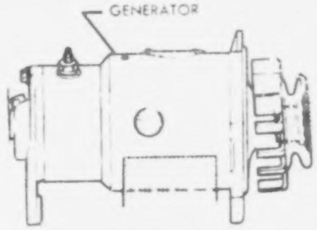
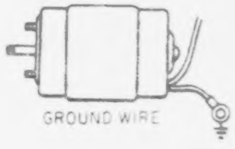
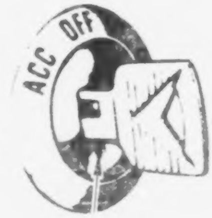
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

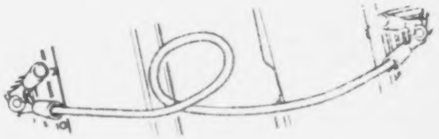
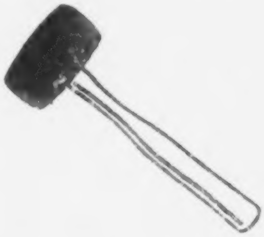
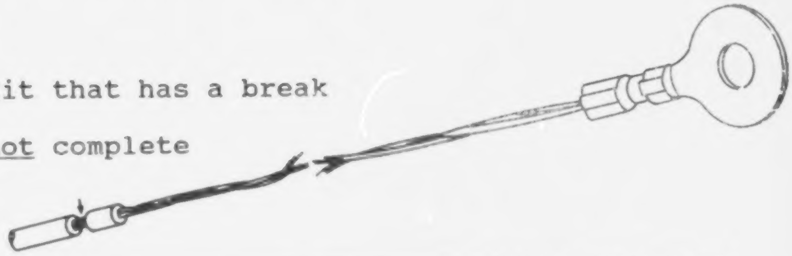
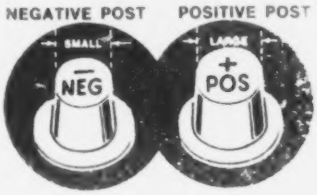
REPLACING GENERATORS AND ALTERNATORS

align (a lign)	adjust to work as planned by the factory	
alternators (al ter na tors)	devices that change mechanical (me chan i cal) energy into electrical energy (like charging the battery)	
amperage (am per age)	strength of flow of electricity	
armature (ar ma ture)	an iron core with wire wrapped around it that picks up electricity from a magnetic field	
components (com po nents)	simple parts of a system	

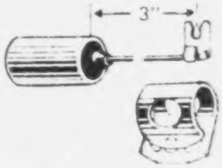
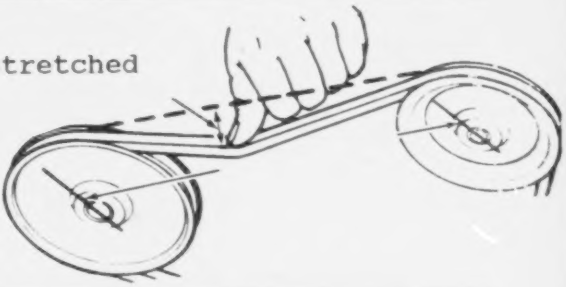
REPLACING GENERATORS AND ALTERNATORS

diode (di ode)	a solid-state electrical device that allows the passage of an electric current in one direction only	 DIODE FLOW BATTERY NO FLOW ALTERNATOR
generator (gen er a tor)	an electromagnetic (e lec tro mag net ic) device that makes electricity	
ground terminal (ground ter mi nal)	the end of an electrical cable that joins to the metal part of a vehicle	 GROUND WIRE
ignition switch (ig ni tion switch)	controls the flow of electricity to the ignition of an engine	
inertia (in er tia)	the force that keeps moving things moving or things that are not moving from moving	

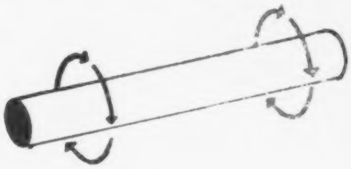
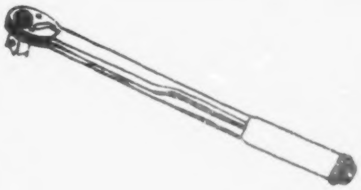
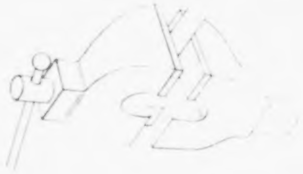
REPLACING GENERATORS AND ALTERNATORS

jumper lead (jum per lead)	a wire that is used to go around a switch to give current to a certain part	
load capacity (load ca pac i ty)	how much electricity a unit will take safely	
mallet (mal let)	a tool with a large soft head used to hammer without harming a surface	
open circuit (o pen cir cuit)	a circuit that has a break or is not complete	
polarized (po lar ized)	to start the flow of electricity in the correct direction	 NEGATIVE POST POSITIVE POST SMALL LARGE − NEG + POS

REPLACING GENERATORS AND ALTERNATORS

radio (ra di o) condenser (con dens er)	another name for a capacitor - stores electrical energy	
reverse (re verse)	to turn around the other way, or to make something go in the opposite direction	
spacer (spac er)	a metal ring or sleeve that holds parts in position	
tension (ten sion)	something pulled or stretched	
tension guage (ten sion guage)	a tool to measure the force of pulling or stretching	

REPLACING GENERATORS AND ALTERNATORS

torque (torque)	the turning or twisting force	
torque wrench (torque wrench)	a tool used to tighten a nut or bolt according to certain limits	
vibration (vi bra tion)	a rapid, undesirable back and forth movement	
vise (vise)	a tool with two jaws to hold something (vise)	

GENERATORS & ALTERNATORS

R A D I O C O N D E N S E R B W P U Q O L
O P E N C I R C U I T S A M P E R A G E M
A L T E R N A T O R S J U M P E R L E A D
R E V E R S E F R H B A T U L M K F Z H L
C A C H X S A U F Z T C D Z N U O A C N B
L C R X P C A M Y A H H V A V V B I G T E
S P A C E R M M L G E N E R A T O R Q U E
M A L L E T K O K P F O H Y A F G K M E A
G R O U N D T E R M I N A L V I S E J W H
V I B R A T I O N P O L A R I Z E D M T T
K T D J I R T Z M E R I Y U Z Z E W P E K
C D W N E V C Z H X E A J I S F G V Z O U
L O A D C A P A C I T Y B F C R L F L J R
T O R Q U E W R E N C H B U O C B Q M V N
C O N D E N S E R J G Q R Y E M E Z H U F
I G N I T I O N S W I T C H E O K T E F I
C O M P O N E N T S I N E R T I A B L B W
S P E C I F I C A T I O N D I O D E Q X R
A A R M A T U R E A L I G N T E N S I O N

Can you find these words?

RADIO CONDENSER
IGNITION SWITCH
GROUND TERMINAL
SPECIFICATION
TORQUE WRENCH
OPEN CIRCUITS
LOAD CAPACITY
ALTERNATORS
JUMPER LEAD

COMPONENTS
VIBRATION
POLARIZED
GENERATOR
CONDENSER
ARMATURE
AMPERAGE
TENSION
REVERSE

INERTIA
TORQUE
SPACER
MALLET
DIODE
ALIGN
VISE

ACROSS

GENERATORS & ALTERNATORS

ANSWER KEY

```
R A D I O C O N D E N S E R . . . . . . .
O P E N C I R C U I T S A M P E R A G E .
A L T E R N A T O R S J U M P E R L E A D
R E V E R S E . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
S P A C E R . . . G E N E R A T O R Q U E
M A L L E T . . . . . . . . . . . . . . .
G R O U N D T E R M I N A L V I S E . . .
V I B R A T I O N P O L A R I Z E D . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
L O A D C A P A C I T Y . . . . . . . . .
T O R Q U E W R E N C H . . . . . . . . .
C O N D E N S E R . . . . . . . . . . . .
I G N I T I O N S W I T C H . . . . . . .
C O M P O N E N T S I N E R T I A . . . .
S P E C I F I C A T I O N D I O D E . . .
. A R M A T U R E A L I G N T E N S I O N
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GENERATORS & ALTERNATORS

C	A	L	T	E	R	N	A	T	O	R	S	P	Y	K	R	R	T	O	V	T
W	G	L	H	W	L	O	A	D	C	A	P	A	C	I	T	Y	E	F	I	T
A	X	Z	N	Y	N	G	J	U	M	P	E	R	L	E	A	D	N	H	B	Y
M	A	X	N	T	L	R	A	D	I	O	C	O	N	D	E	N	S	E	R	C
P	S	G	O	T	R	O	N	I	G	V	I	S	E	G	K	V	I	G	A	K
E	A	R	M	A	T	U	R	E	N	J	F	I	J	O	J	J	O	W	T	U
R	V	A	L	I	G	N	U	O	I	O	I	E	O	O	D	C	N	E	I	G
A	Z	L	W	R	N	D	Y	V	T	Y	C	X	P	H	N	E	J	Q	O	I
G	E	N	E	R	A	T	O	R	I	O	A	G	E	C	S	T	N	I	N	Y
E	T	O	R	Q	U	E	F	K	O	P	T	C	N	O	C	S	T	L	J	I
U	O	R	E	V	E	R	S	E	N	H	I	K	C	M	S	P	A	C	E	R
D	D	E	D	G	I	M	M	Z	S	R	O	K	I	P	G	O	E	V	X	E
H	I	N	E	R	T	I	A	L	W	I	N	J	R	O	B	L	G	J	W	I
B	O	V	Q	F	T	N	L	Q	I	N	N	E	C	N	I	A	Z	M	O	E
W	D	F	J	P	A	A	L	K	T	O	R	Q	U	E	W	R	E	N	C	H
A	E	Q	R	T	P	L	E	H	C	J	V	B	I	N	X	I	R	E	Z	Y
W	W	I	C	Y	Z	Z	T	H	H	B	W	C	T	T	J	Z	N	I	J	U
N	H	T	R	R	A	G	O	Q	N	L	E	Z	S	S	D	E	H	B	R	F
X	S	Y	K	L	M	H	P	C	D	L	Q	F	Q	P	I	D	G	B	H	F

Can you find these words?

RADIO CONDENSER
IGNITION SWITCH
GROUND TERMINAL
SPECIFICATION
TORQUE WRENCH
OPEN CIRCUITS
LOAD CAPACITY
ALTERNATORS
JUMPER LEAD

COMPONENTS
VIBRATION
POLARIZED
GENERATOR
CONDENSER
ARMATURE
AMPERAGE
TENSION
REVERSE

INERTIA
TORQUE
SPACER
MALLET
DIODE
ALIGN
VISE

ACROSS/DOWN

GENERATORS & ALTERNATORS

ANSWER KEY

. A L T E R N A T O R S . . . . . T . V .

. . . . . L O A D C A P A C I T Y E . I .

A . . . . . G J U M P E R L E A D N . B .

M . . . . . R A D I O C O N D E N S E R .

P . . . . . O . . G V I S E . . . I . A .

E A R M A T U R E N . F . . . . . O . T .

R . A L I G N U . I . I . O . . . N . I .

A . . . . . D . . T . C . P . . . . . O .

G E N E R A T O R I . A . E C . . . . N .

E T O R Q U E . . O . T . N O . . . . . .

. . R E V E R S E N . I . C M S P A C E R

. D . . . . M M . S . O . I P G O . . . .

. I N E R T I A . W . N . R O . L . . . .

. O . . . . N L . I . . . C N . A . . . .

. D . . . . A L . T O R Q U E W R E N C H

. E . . . . L E . C . . . I N . I . . . .

. . . . T . H . . . T T . Z . . . .

. . . . S S . E . . . .

. . . . D . . . .

GENERATORS & ALTERNATORS

W W P C N F D M A B G S P A C E R X X L D
A B R N S X Z U C Q Q A W O A C A Y M A H
V R T E N S I O N Y V U L Y L I L H E A F
L O A D C A P A C I T Y X J W A I L I D J
G C G M A L T E R N A T O R S C R T W U S
E W O R A D I O C O N D E N S E R I I U N
G F F M O L A G M I J V U A P E D N Z A V
Y Z G X P U L M N W F J I M N N G I T E I
H E P E E O N E P I L I U I O I M T O V D
S Z S L N W N D T E T J C I L I H Z R D J
E C T G C E L E T P R I T A T H F O Q V E
K X H K I Y R N N E S A O V T C C M U T I
K E P H R B F A U T R R G N S I Z W E R E
W X I N C O O Q T B S M E E S B O K W R K
M K R L U Z R J I O D A I V Z W B N R U N
C P P R I O G V Y T R T X N E C I B E F H
W X V X T X A W L B Q U H S A R K T N S O
F X C X S E O X S G Q R M T Q L S H C W W
K Y G U E W C A O P Y E C G V I S E H H Z

Can you find these words?

RADIO CONDENSER
IGNITION SWITCH
GROUND TERMINAL
SPECIFICATION
TORQUE WRENCH
OPEN CIRCUITS
LOAD CAPACITY
ALTERNATORS
JUMPER LEAD

COMPONENTS
VIBRATION
POLARIZED
GENERATOR
CONDENSER
ARMATURE
AMPERAGE
TENSION
REVERSE

INERTIA
TORQUE
SPACER
MALLET
DIODE
ALIGN
VISE

ACROSS/DOWN/DIAGONAL

AM-2-20

GENERATORS & ALTERNATORS

```
. . . . . . . . . . . S P A C E R . . . D

. . . . . . . . . . . . . O . . . . . A .

. . T E N S I O N . . . . . L . . . E A .

L O A D C A P A C I T Y . . . A . L I . .

. C G M A L T E R N A T O R S . R T . . .

. . O R A D I O C O N D E N S E R I . . .

. . . M O L A G . I . . . . P E D N Z . .

. . G . P U L M N . F . . M N N G I T E .

. . . E E O N E P I . I U I O I . . O . D

. . . . N . N D T E T J C I L . . . R D .

. . . . C E . E T . R I T A . . . . Q . E

. . . . I . R . N E . A O . T . . . U . .

. . . . R . . A U T R R G N . I . . E . .

. . . . C . . Q T B S M E E S . O . W . .

. . . . U . R . I O . A I V . W . N R . .

. . . . I O . V . . R T . N E . I . E . .

. . . . T . . . . . . U . . A R . T N . .

. . . . S . . . . . . R . . . L S . C . .

. . . . . . . . . . . E . . V I S E H H .
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GENERATORS & ALTERNATORS I

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	1			2		XX XX	XX XX	XX XX	3	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	4	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	5										XX XX	XX XX	XX XX	6	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	8					XX XX	XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

1. to put in the order that is planned by the factory
5. parts of something
8. a solid-state electrical check valve

DOWN:

2. an electromagnetic device that makes electricity
3. a conductor that turns in a magnetic field
4. devices that charge mechanical energy into electrical energy
6. strength of flow of electricity

GENERATORS & ALTERNATORS I

ANSWER KEY

ACROSS:		DOWN:	
1.	ALIGN	2.	GENERATOR
5.	COMPONENTS	3.	ARMATURE
8.	DIODE	4.	ALTERNATORS
		6.	AMPERAGE

```
A L I G N       A
      E         R
      N         M
      E         A
      R         T
      A         U   A
      T         R   L
    C O M P O N E N T S     A
      R             E       M
                    R       P
                    N       E
                    A       R
                    T       A
                D I O D E   G
                    R       E
                    S
```

GENERATORS & ALTERNATORS II

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	2						XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	3	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	4										5				XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	6							XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	7	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
8										XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. a tool with a large head used to hit and shape another tool or surface
4. end of a battery cable that joins to the metal part of a vehicle (2 words)
6. force to keep moving things moving or things that are not moving from moving
8. a wire that is used to give current to a certain part (2 words)

DOWN:

1. to turn around to the other way, or to make something turn in the other way
3. the amount of electricity a unit will take safely (2 words)
5. controls the flow of electricity (2 words)
7. separation of negative (-) and positive (+) charge

GENERATORS & ALTERNATORS II

ANSWER KEY

ACROSS:
2. MALLET
4. GROUNDTERMINAL
6. INERTIA
8. JUMPERLEAD

DOWN:
1. REVERSE
3. LOADCAPACITY
5. IGNITIONSWITCH
7. POLARIZED

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                R
        M A L L E T
      L         V
  G R O U N D T E R M I N A L
      A         R     G
      D         S   I N E R T I A
      C     P   E     I
      A     O         T
J U M P E R L E A D   I
      A     A         O
      C     R         N
      I     I         S
      T     Z         W
      Y     E         I
            D         T
                      C
                      H
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GENERATORS & ALTERNATORS III

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	3												XX XX	XX XX	XX XX	XX XX
4						XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	5									XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	6				XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

3. a tool used to tighten a nut or bolt according to certain limits (2 words)
4. the turning or twisting force
5. moving back and forth
6. a tool with two jaws to hold something

DOWN:

1. a metal ring
3. something pulled or stretched

GENERATORS & ALTERNATORS III

ANSWER KEY

ACROSS:

3. TORQUEWRENCH
4. TORQUE
5. VIBRATION
6. VISE

DOWN:

1. SPACER
3. TENSION

```
              S

              P

              A

              C

              E

          T O R Q U E W R E N C H

T O R Q U E

          N       V I B R A T I O N

      V I S E

          I

          O

          N
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LEARNING WORDS USED IN REPAIRING STARTERS

INTRODUCTION

The auto mechanic must be prepared to perform full service on the starter motor. To give full service, the mechanic must not only replace starters, but he must also be capable of making the repairs normally performed in the field. In this unit you will learn the technical vocabulary related to repairing starters.

PERFORMANCE OBJECTIVES

You will match 27 words used in repairing starters with their definitions. Your teacher will provide a list of words and definitions. You should match at least 22 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

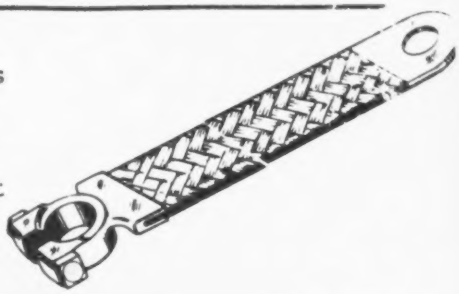
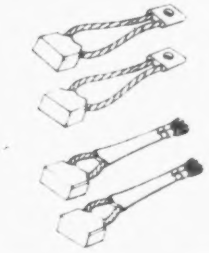
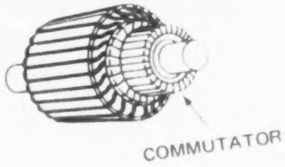
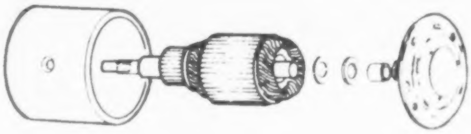
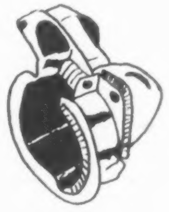
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

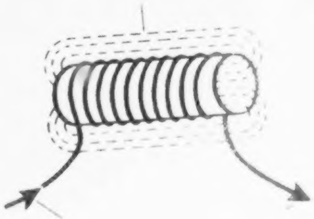
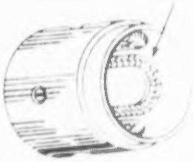
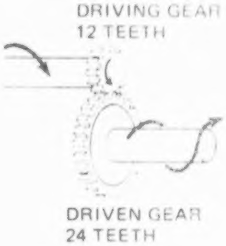
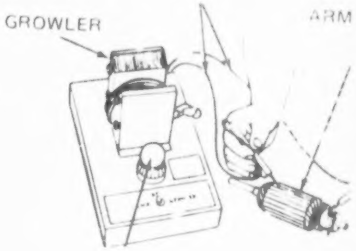
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

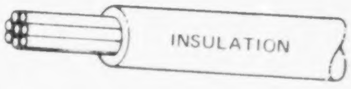
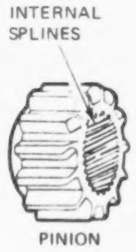
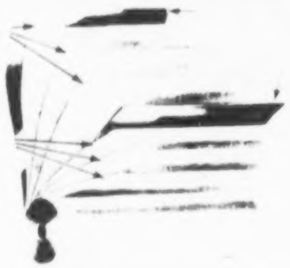
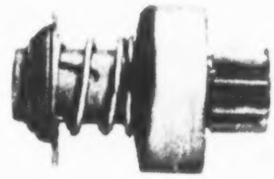
REPAIRING STARTERS

battery (bat ter y) ground cable (ground ca ble)	the heavy wire that fastens from the negative post on the battery to a metal part of the vehicle	
brushes (brush es)	made of carbon or copper, they contact the commutator to carry current in a motor or generator	
commutator (com mu ta tor)	a part of the armature to which the wires are fastened and which the brushes contact	
disassemble (dis as sem ble)	to take apart	
drive housing (drive hous ing)	end of the starter motor that is bolted to the engine	

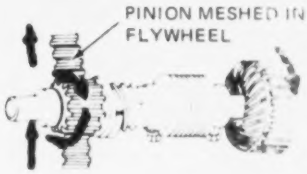
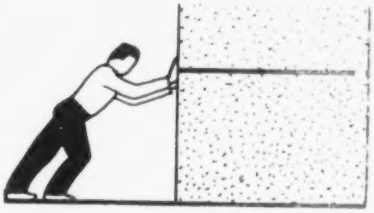
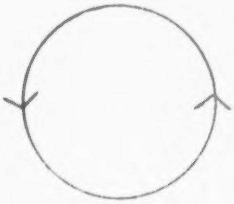
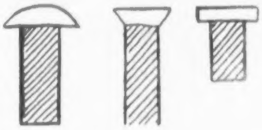
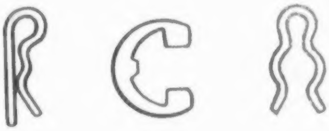
REPAIRING STARTERS

end-frame (end frame)	end of the starter motor that holds the bushing for commutator, end of armature, and sometimes brush holders	
energized (en er gized)	charged with energy	
field coil (field coil)	a wire that is insulated and wraps around an iron or steel pole and is fastened to the starter body	
gear teeth (gear teeth)	the teeth on a gear that mesh with the spaces between the teeth on another gear	
growler (growl er)	a tool used to test a starter armature for electrical problems	

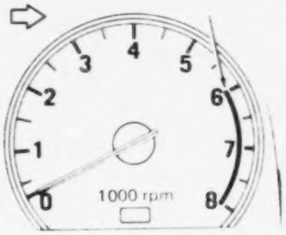
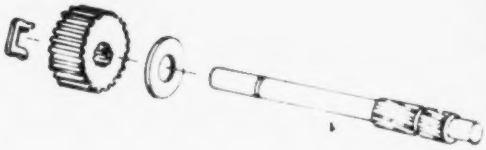
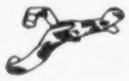
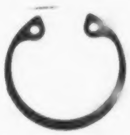
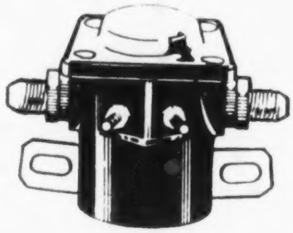
REPAIRING STARTERS

insulation (in su la tion)	material that will not conduct electricity or heat	
internal (in ter nal)	inside	
laminations (lam i na tions)	many thin sheets put together	
over-running (o ver-run ning) clutch (clutch)	a starter drive gear that will disengage the starter when the engine starts	
parallel (par al lel)	side by side facing the same way	

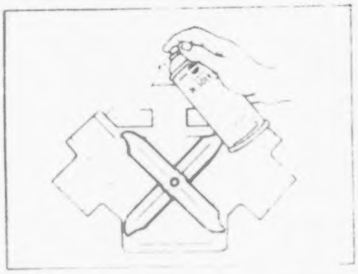
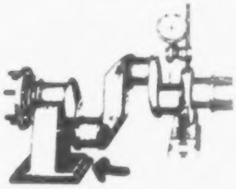
REPAIRING STARTERS

pinion (pin ion)	a small gear whose teeth mesh with a large gear.	
resistance (re sis tance)	a force that stops or slows down motion	
revolutions (rev o lu tions)	turning through a complete circle	
rivet (riv et)	metal pin used to hold things together	
retainer (re tain er)	something that holds an object in place	

REPAIRING STARTERS

RPM indicator (RPM in di ca tor)	a device to show revolutions per minute (tachometer)	
shaft (shaft)	a long round bar on which something turns	
shift lever (shift lev er)	a device used to shift gears into and out of mesh	
snap ring (snap ring)	a split ring that snaps on to a shaft	
solenoid (so le noid)	converts electrical energy into mechanical energy	

REPAIRING STARTERS

solvent (sol vent)	a liquid that is used for cleaning because it dissolves grease and dirt	
V-blocks (V-blocks)	a fixture that holds round objects so that they can be cut or machined	

STARTERS

L K O J U Y N V T E Q Z P M K L U H N R C

F Y B P Q Z U M R C Q B K S L I O M D R M

R P M I N D I C A T O R P A R A L L E L K

D I S A S S E M B L E F I E L D C O I L P

L A M I N A T I O N S O L E N O I D Y U M

L B H Y N C R V U M I N Y V O R I V E T Q

I N S U L A T I O N I N T E R N A L L P J

S H I F T L E V E R E T A I N E R A Q W Z

B R U S H E S G R O W L E R P Q D Z C X N

S O L V E N T P I N I O N Z J K F D T Y N

L A Q W S R T B S U M I K F O L P S X B F

L J U E N E R G I Z E D G E A R T E E T H

R E S I S T A N C E C O M M U T A T O R A

S N A P R I N G L O M Y V X W Q Z H T Y B

D R I V E H O U S I N G P B G X E J M Y N

E N D F R A M E L G Y N E X W C R B G T N

K J H G F V B N Y R E V S C M N L X Z D F

L P O M I E W F V V B L O C K S L K J G F

R E V O L U T I O N S O P I S H A F T K J

Can you find these words?

REVOLUTIONS
SHIFT LEVER
COMMUTATOR
FIELD COIL
RETAINER
END FRAME
SOLVENT
PINION
SHAFT

RPM INDICATOR
LAMINATIONS
RESISTANCE
SOLENOID
PARALLEL
GROWLER
INTERNAL
RIVET

DRIVE HOUSING
DISASSEMBLE
INSULATION
GEAR TEETH
ENERGIZED
SNAP RING
V-BLOCKS
BRUSHES

ACROSS

STARTERS

ANSWER KEY

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. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
R P M I N D I C A T O R P A R A L L E L .
D I S A S S E M B L E F I E L D C O I L .
L A M I N A T I O N S O L E N O I D . . .
. . . . . . . . . . . . . . . R I V E T .
I N S U L A T I O N I N T E R N A L . . .
S H I F T L E V E R E T A I N E R . . . .
B R U S H E S G R O W L E R . . . . . . .
S O L V E N T P I N I O N . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . E N E R G I Z E D G E A R T E E T H
R E S I S T A N C E C O M M U T A T O R A
S N A P R I N G . . . . . . . . . . . . .
D R I V E H O U S I N G . . . . . . . . .
E N D F R A M E . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . V B L O C K S . . . . .
R E V O L U T I O N S . . . S H A F T . .
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STARTERS

R I T B V F W Q B K E X U V T J G T Q S N

S X T U Q F V L W E C T E I S I E N W O B

D J K S H I U S K C O J Z Q S H A F T L R

A L G D L S L B T C I J S M I W R P W E U

O P A R A L L E L D R E V O L U T I O N S

X O G T M T C D N D P V L S P D E N W O H

F F I D I S A S S E M B L E S S E I Y I E

U J S V N N K D I H I L M D E H T O N D S

C G R L A A C R R I N O S P H I H N K W E

O G W I T P I I E L D C O I L F I N S P P

M E Y O I R E V T O I X L N G T U G K Q B

M N X G O I D E A I C S V S R L J O F K I

U E J N N N M H I W A I E U O E P H K Q C

T R W R S G S O N I T P N L W V I B T H X

A G N M V X Q U E I O T T A L E W G A Z O

T I U E U T S S R E R I N T E R N A L V D

O Z J H P V K I P S R C U I R I V E T B E

R E S I S T A N C E X I K O I K J S M O J

O D L Y E C Q G J P R I E N D F R A M E F

Can you find these words?

REVOLUTIONS
SHIFT LEVER
COMMUTATOR
FIELD COIL
RETAINER
END FRAME
SOLVENT
PINION
SHAFT

RPM INDICATOR
LAMINATIONS
RESISTANCE
SOLENOID
PARALLEL
GROWLER
INTERNAL
RIVET

DRIVE HOUSING
DISASSEMBLE
INSULATION
GEAR TEETH
ENERGIZED
SNAP RING
V-BLOCKS
BRUSHES

ACROSS/DOWN

STARTERS

ANSWER KEY

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. . . . . . . . . . . . . . . . G . . S .
. . . . . . . . . . . . . . . . E . . O B
. . . . . . . . . . . . . . S H A F T L R
. . . . L . . . . . . . . . . . R P . E U
. P A R A L L E L . R E V O L U T I O N S
. . . . M . . . . . P V . . . . E N . O H
. . . D I S A S S E M B L E . S E I . I E
. . . . N N . D . . I L . . . H T O . D S
C . . . A A . R R . N O S . . I H N . . .
O . . . T P . I E . D C O I L F . . . . .
M E . . I R . V T . I K L N G T . . . . .
M N . . O I . E A . C S V S R L . . . . .
U E . . N N . H I . A . E U O E . . . . .
T R . . S G . O N . T . N L W V I . . . .
A G . . . . U E . O . T A L E . . . . . .
T I . . . . . S R . R I N T E R N A L . .
O Z . . . . . I . T . . . I R I V E T . .
R E S I S T A N C E . . . O . . . . . . .
. D . . . . . G . . . . E N D F R A M E .
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STARTERS

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Z S O L E N O I D E X C E S S I V E D Q O
S H A F T P N R M T M G S N W R I C G P L
K I N S U L A T I O N N O D E W I N C B J
D F P Y H A V G G I O I Q L E R I W N Y N
Z T V B L O C K S I T Y W U E R G F C I H
K L W C O M M U T A T O R C P I N I O N L
M E A P V P O U N Q R G N A O K O E Z T U
R V C M H H L I G G T A N J X T B L P E B
P E E I E O M G K E T S I U X E O D V R D
M R W V V A G Z R S A F E T H I C C E N O
I F I E L O C P I Q O R P M I F I O N A E
N R R I V E T S K Y U V T B Q G A I D L E
D I S A S S E M B L E P E E R L B L F E M
I Z O L K R E T A I N E R H E U D M R U W
L E L T C N P E X E O L M I I T S M A P M
A T R R E D Q N B P X Z A F C C H H M V H
T L W K N B M K Q M N B P A R A L L E L U
O K M A C Z W R J L N C R E F D N E O S M
R J S B G R V T Q N R S O L V E N T I E W
```

Can you find these words?

REVOLUTIONS
SHIFT LEVER
COMMUTATOR
FIELD COIL
RETAINER
END FRAME
SOLVENT
PINION
SHAFT

RPM INDICATOR
LAMINATIONS
RESISTANCE
SOLENOID
PARALLEL
GROWLER
INTERNAL
RIVET

DRIVE HOUSING
DISASSEMBLE
INSULATION
GEAR TEETH
ENERGIZED
SNAP RING
V-BLOCKS
BRUSHES

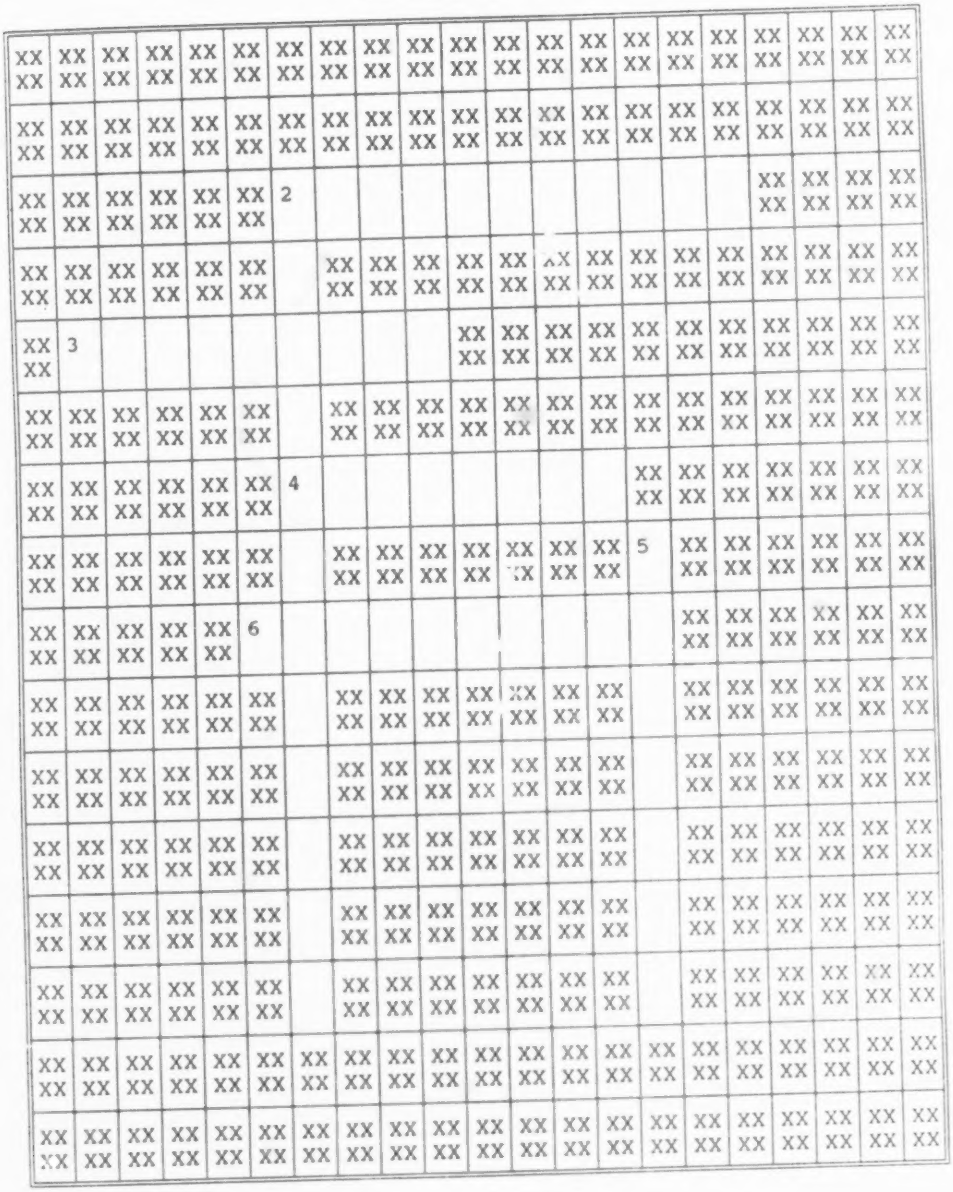
ACROSS/DOWN/DIAGONAL

STARTERS

ANSWER KEY

```
. S O L E N O I D E X C E S S I V E . . .
S H A F T . . . . . . G S N . R . . G . .
. I N S U L A T I O N N O . E . . N . . .
. F . . . . . . . I O I . L . R I . . . .
. T V B L O C K S I T . W . E R G F . I .
. L . C O M M U T A T O R C P I N I O N .
. E . . . . O U N . R . N A . . . E Z T .
R V . . . H L I G G . A N . . . . L . E .
P E . . E O M . . E T S . . . . . D . R D
M R . V V A . . . S A . . . . . . C E N .
I F I E L . . . I . . R . . . . . O N A .
N R R I V E T S . . U V T B . . . I D L .
D I S A S S E M B L E B E E R . . L F . .
I . . . . R E T A I N E R H E U . . R . .
C . . . . . . . . . . . . I I T S . A . .
A . . . . . . . . . . . . . C C H H M . .
T . . . . . . . . . . . P A R A L L E L .
O . . . . . . . . . . . . . . . N E . S .
R . . . . . . . . . . S O L V E N T . . .
```

STARTERS I



ACROSS:

2. to take apart
3. charged
4. unit that holds the bushing for commutator, end of armature, & brush holders (-)
6. a bar that lets current flow through

DOWN:

2. a unit that is bolted to the engine (2 words)
5. pieces of carbon or copper that rub the commutator to help start a motor

STARTERS I

ANSWER KEY

ACROSS:

2. DISASSEMBLE
3. ENERGIZED
4. ENDFRAME
6. COMMUTATOR

DOWN:

2. DRIVEHOUSING
5. BRUSHES

```
          D I S A S S E M B L E
          R
E N E R G I Z E D
          V
          E N D F R A M E
          H               B
        C O M M U T A T O R
          U               U
          S               S
          I               H
          N               E
          G               S
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STARTERS II

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	2												XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	3	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	4	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	5							6				XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	7										XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. device to show revolutions per minute (2 words)
5. many thin sheets of something put together
7. something that stops the flow of electricity or heat

DOWN:

1. a metal pin used to hold things together
2. something turning all the way around
3. something that holds an object in place
4. side by side facing the same way
6. inside

STARTERS II

ANSWER KEY

ACROSS:

2. RPM INDICATOR
5. LAMINATIONS
7. INSULATION

DOWN:

1. RIVET
2. REVOLUTIONS
3. RETAINER
4. PARALLEL
6. INTERNAL

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                              R
                              I
                              V
                              E
            R P M I N D I C A T O R
            E
R           V
E           O         P
T           L A M I N A T I O N S
A           U         R   N
I N S U L A T I O N   A   T
N           I         L   E
E           O         L   R
R           N         E   N
            S         L   A
                          L
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STARTERS III

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	2								XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	3								XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	4	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	6	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	7							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. a magnetic switch that changes over-running clutch into being engaged
3. a split ring that snaps into a shaft or hole (2 words)
7. device that holds round things so that they can be worked on (-)

DOWN:

2. a device used to shift gears (2 words)
4. a long form like a tube
6. a liquid that loosens something and adds it to the liquid

STARTERS III

ANSWER KEY

ACROSS:

2. SOLENOID
3. SNAPRING
7. VBLOCKS

DOWN:

2. SHIFTLEVER
4. SHAFT
6. SOLVENT

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          S O L E N O I D
          H
S N A P R I N G
          F
    S     T
    H     L
    A     E     S
    F     V B L O C K S
    T     E     L
          R     V
                E
                N
                T
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STARTERS IV

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	2	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	3									XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	5						XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	6							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

3. a wire that is covered and wraps around an iron or steel center (2 words)
5. a small wheel with spokes that goes around inside a wheel with notches
6. a tool used to test a starter

DOWN:

1. something that stops or slows down motion
2. the teeth on a gear that join with the spaces between teeth on another gear (2 words)

STARTER III

ANSWER KEY

ACROSS:		DOWN:	
3.	FIELDCOIL	1.	RESISTANCE
5.	PINION	2.	GEARTEETH
6.	GROWLER		

					R									G
			F	I	E	L	D	C	O	I	L			E
					S									A
					I									R
					S									T
					T									E
					A									E
			P	I	N	I	O	N						T
					C									H
G	R	O	W	L	E	R								

LEARNING WORDS USED IN INSPECTING AND REPLACING POINTS AND CONDENSERS

INTRODUCTION

For efficient ignition system operation, the current flow through the primary circuit of the ignition system must be interrupted (broken) instantly and cleanly with no current jumping or arcing across the point of contact when the connection is broken. The breaker points are used to connect and disconnect the flow of current in the primary circuit. The unit that prevents arcing of current when the points open is the condenser. In this unit you will learn the technical vocabulary related to points and condensers.

PERFORMANCE OBJECTIVE

You will match 27 words used in inspecting and replacing points and condensers with their definitions. Your teacher will provide a list of words and definitions. You should match at least 22 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

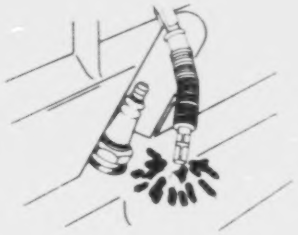
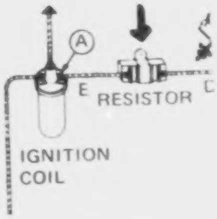
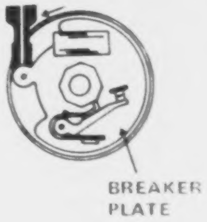
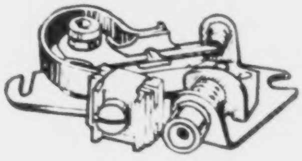
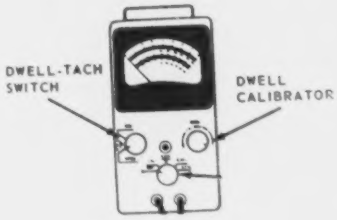
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

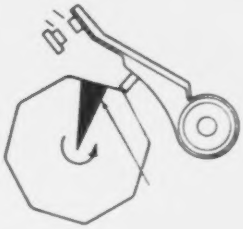
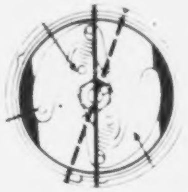
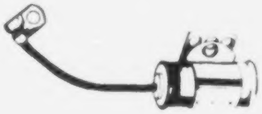
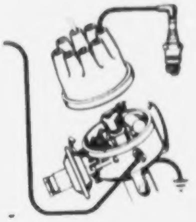
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

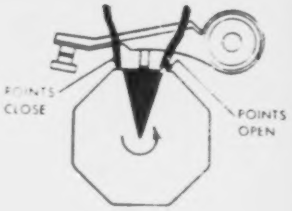
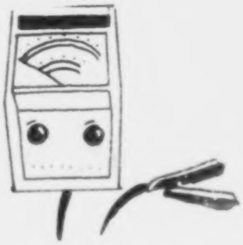
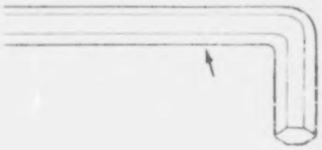
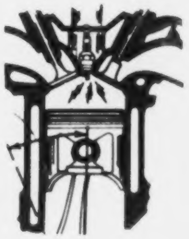
INSPECTING AND REPLACING POINTS AND CONDENSERS

arcing (arc ing)	electricity jumping across two closely spaced points	
ballast (bal last) resistor (re sis tor)	a unit placed in series in the ignition (ig ni tion) primary (pri ma ry) circuit to lower battery voltage to the breaker points	 A E RESISTOR D IGNITION COIL
breaker plate (break er plate)	a plate inside the distributor (dis trib u tor) where the breaker points are mounted	 BREAKER PLATE
breaker points (break er points)	a contact switch that opens and closes as the distributor shaft turns	
calibrate (cal i brate)	to check the setting of a meter	 DWELL-TACH SWITCH DWELL CALIBRATOR

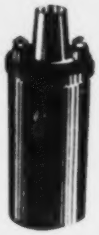
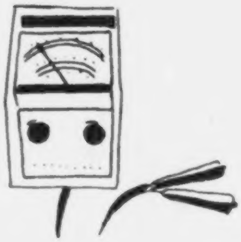
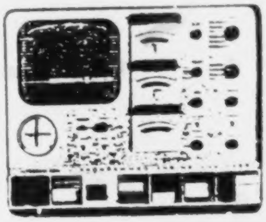
INSPECTING AND REPLACING POINTS AND CONDENSERS

cam (cam)	a device used to open the breaker points	
capacity (ca pac i ty)	able to contain, absorb or hold	
centrifugal (cen trif u gal)	a force that tries to pull a rotating object away from its circular path	
condenser (con dens er)	a device that receives or stores an electric charge	
distributor (dis trib u tor)	a rotating switch that opens the breaker points and directs high voltage to engine spark plugs	

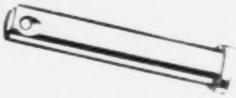
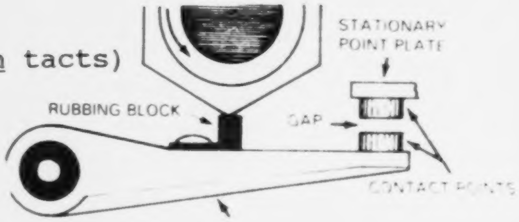
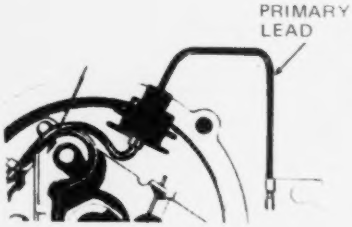
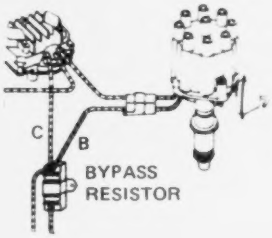
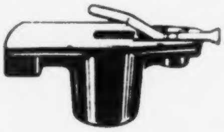
INSPECTING AND REPLACING POINTS AND CONDENSERS

dwell (dwell)	the number of degrees of a circle that the distributor (dis trib u tor points are closed during the rotation of the distributor shaft	
dwell meter (dwell me ter)	an instrument that measures degrees of dwell	
hex key (hex key)	a tool that turns bolts or screws which have a six-sided recess	
idle (i dle)	the engine running at a slow speed with throttle (throt tle) closed	
ignition (ig ni tion)	lighting fuel with a spark for gas engine or with heat of compression (com pres sion) for diesel	

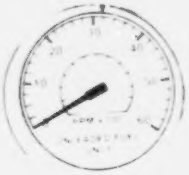
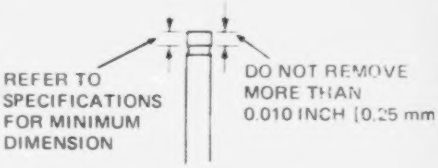
INSPECTING AND REPLACING POINTS AND CONDENSERS

ignition coil (ig ni tion coil)	a unit used to step up battery voltage to fire spark plugs	
micro (mi cro)	a small amount	
micro farads (mi cro fa rads)	$\frac{1}{1,000,000}$ of a unit of capacitance (ca pac i tance; a measure of the ability to store electrical charge)	
ohmmeter (ohm meter)	an instrument to measure the resistance (re sis tance) in an electrical unit	
oscilloscope (os cil lo scope)	a high speed voltmeter that shows the result on a screen like a TV	

INSPECTING AND REPLACING POINTS AND CONDENSERS

pivot pin (piv ot pin)	a pin on the shaft that allows parts to move	
points (points)	electric contacts (con tacts)	 STATIONARY POINT PLATE RUBBING BLOCK GAP CONTACT POINTS
primary wire (pri ma ry wire)	wiring used for sending low voltage to points	 PRIMARY LEAD
resistor (re sis tor)	a device put in a circuit to lower voltage	 C B BYPASS RESISTOR
rotor (ro tor)	the part of a mechanism that turns	

INSPECTING AND REPLACING POINTS AND CONDENSERS

tachometer (ta chom e ter)	an instrument to show the speed of the engine in rpm (revolutions per minute)	
tolerance (tol er ance)	the amount a measurement may be different from the design specifications and still be correct to use	 REFER TO SPECIFICATIONS FOR MINIMUM DIMENSION DO NOT REMOVE MORE THAN 0.010 INCH [0.25 mm

POINTS & CONDENSERS

B A L L A S T R E S I S T O R M F X X N I

I G N I T I O N C O I L R E S I S T O R S

D W E L L M E T E R M I C R O X S P R J U

H B Y Z M V C K N P N O R F V H J J X N O

I G N I T I O N V P X U W U O N Z I M I J

A C R W J T H M W R I H Q I O M T Z G C A

V S B T K D Q P V H Z N U T Y F N L T K T

S J O W D I S T R I B U T O R P O I N T S

C A P A C I T Y S T A C H O M E T E R O D

C A L I B R A T E O C I E P B U A H S I Z

P R I M A R Y W I R E O H M M E T E R N S

C A M Y C E N T R I F U G A L H E X K E Y

R O T O R G B R E A K E R P O I N T S R A

O S C I L L O S C O P E T O L E R A N C E

P I V O T P I N I D L E X L T F L Z P M C

Z P V H J Z L M S M G B S W F K B T B U O

K R Z A J C W J X U F L Q Y W D W E L L O

F L M I C R O F A R A D S L E I D J L Z Q

B R E A K E R P L A T E A R C I N G X O A

Can you find these words?

BALLAST RESISTOR
OSCILLOSCOPE
PRIMARY WIRE
CENTRIFUGAL
TOLERANCE
PIVOT PIN
CAPACITY
ARCING
DWELL

BREAKER POINTS
IGNITION COIL
MICROFARADS
TACHOMETER
CALIBRATE
OHMMETER
POINTS
ROTOR
IDLE

BREAKER PLATE
DISTRIBUTOR
DWELL METER
RESISTOR
IGNITION
HEX KEY
MICRO
CAM

ACROSS

POINTS & CONDENSERS

ANSWER KEY

B A L L A S T R E S I S T O R . . . . . .

I G N I T I O N C O I L R E S I S T O R .

D W E L L M E T E R M I C R O . . . . . .

. . . .

I G N I T I O N . . . .

. . . .

. . . .

. . . . D I S T R I B U T O R P O I N T S

C A P A C I T Y . T A C H O M E T E R . .

C A L I B R A T E . . . .

P R I M A R Y W I R E O H M M E T E R . .

C A M . C E N T R I F U G A L H E X K E Y

R O T O R . B R E A K E R P O I N T S . .

O S C I L L O S C O P E T O L E R A N C E

P I V O T P I N I D L E . . . .

. . . .

. . . . D W E L L .

. . M I C R O F A R A D S . . . .

B R E A K E R P L A T E A R C I N G . . .

POINTS & CONDENSERS

M O W L G T E I G N I T I O N C O I L U O
C P R I M A R Y W I R E K K D D R O K K H
E I O G M C Q F Y H I P B B W I M Y V A U
G V T N B H B A L L A S T R E S I S T O R
G O O I R O R L Z P L P U T L T C W U H Q
F T R T E M E N R U B Q F B L R R C K M F
P P P I A E A E E I B U P E M I O C F M Y
P I V O K T K M T T X Q A F E B F U L E N
T N C N E E E S O D I X C Q T U A T H T A
I R A N R R R A M H R C C E E T R T K E W
T E R B P K P Y I W E Y T U R O A D C R T
O S C I L L O S C O P E C E U R D D I V P
L I I C A L I B R A T E A N N O S S X E T
E S N W T Y N L O E Z U P B Q F L P S W G
R T G C E N T R I F U G A L V T K E M X U
A O P U C U S L I D V V C D Z N H J N X M
N R S P C T Q D D S E A I L H W H R U H U
C A M Q T Z E L L J D K T V P N W A A D Z
E S G W I E C H E X K E Y O Z X Q J D H Y

Can you find these words?

BALLAST RESISTOR
OSCILLOSCOPE
PRIMARY WIRE
CENTRIFUGAL
TOLERANCE
PIVOT PIN
CAPACITY
ARCING
DWELL

BREAKER POINTS
IGNITION COIL
MICROFARADS
TACHOMETER
CALIBRATE
OHMMETER
POINTS
ROTOR
IDLE

BREAKER PLATE
DISTRIBUTOR
DWELL METER
RESISTOR
IGNITION
HEX KEY
MICRO
CAM

ACROSS/DOWN

POINTS & CONDENSERS

ANSWER KEY

```
. . . . . T . I G N I T I O N C O I L . .
. P R I M A R Y W I R E . . D D . . . . .
. I O G . C . . . . . . . . W I M . . . .
. V T N B H B A L L A S T R E S I S T O R
. O O I R O R . . . . . . . L T C . . H .
. T R T E M E . . . . . . . L R R . . M .
. P . I A E A . . . . . . . M I O . . M .
. I . O K T K . . . . . . . E B F . . E .
. N . N E E E . . . . . . . T U A . . T .
. R A . R R R . M . . . . . E T R . . E .
T E R . P . P . I . . . . . R O A . . R .
O S C I L L O S C O P E C . . R D . . . .
L I I C A L I B R A T E A . . . S . . . .
E S N . T . N . O . . . P . . . . . . . .
R T G C E N T R I F U G A L . . . . . . .
A O . . . . S . I . . . C . . . . . . . .
N R . . . . . . D . . . I . . . . . . . .
C A M . . . . . L . . . T . . . . . . . .
E . . . . . . H E X K E Y . . . . . . . .
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POINTS & CONDENSERS

I R K L G Y B O Y M S D R J B T T I R W W
G C A L I B R A T E H H M P I Z Q U M G V
N M A M I C R O F A R A D S Y T O P U I R
I O O O B S U E B R E A K E R P O I N T S
T C B S O B B P A O B E K J G G V V O R K
I A R C I N G W L K Q X U Z H I E O E Z Q
O P Z I D W E L L M E T E R R R J T B N D
N B Y L J H B O A H N R M H I N E P O J V
C J U L R E S I S T O R P W B M X I I M M
O Y J O E R U B T X E M Y L O L T N X C K
I V T S S O N L R T B N E H A I B F C S M
L C Q C A T O L E R A N C E N T W P O F E
A F A O R F M M S M Y A K G X P E M N L M
A H S P U Q M D I S T R I B U T O R D A E
N D O E A H B R S B C H O A R F M I C R O
E N Y A O C P M T I S J L T L M B G N K S
D T V I Z L I L O V J K L N O W B Z X T M
M L O V C E N T R I F U G A L R C Y D O S
S F Y H B M M Q Y J N I S C P G O P V V O

Can you find these words?

BALLAST RESISTOR
OSCILLOSCOPE
PRIMARY WIRE
CENTRIFUGAL
TOLERANCE
PIVOT PIN
CAPACITY
ARCING
DWELL

BREAKER POINTS
IGNITION COIL
MICROFARADS
TACHOMETER
CALIBRATE
OHMMETER
POINTS
ROTOR
IDLE

BREAKER PLATE
DISTRIBUTOR
DWELL METER
RESISTOR
IGNITION
HEX KEY
MICRO
CAM

ACROSS/DOWN/DIAGONAL

POINTS & CONDENSERS

ANSWER KEY

```
I . . . . . . . . . . . . . . . . . . . .
G C A L I B R A T E . . . . . . . . . . .
N . . M I C R O F A R A D S Y . . P . . .
I . . O . . . E B R E A K E R P O I N T S
T . . S . . . . A . . . K . . . . V . R .
I A R C I N G . L K . X . . . . E O E . .
O . . I D W E L L M E T E R . R . T . N .
N . . L . . . . A H . R . . I . E P O . .
C . . L R E S I S T O R P W . M . I . . .
O . . O . . . . T . E . Y L O . T N . . .
I . . S . . . . R T . R . H A I . . . . .
L C . C . T O L E R A N C E N T . . . . E
. . A O . . . M S M . A . G . P E . . L M
. . . P . . M D I S T R I B U T O R D A .
. . . E A H . R S . . . O . . . M I C R O
. . . . O C P . T . . . . T . . . . N . .
. . . . . . I . O . . . . . O . . . . T .
. . . . C E N T R I F U G A L R . . . . S
. . . . . . . . Y . . . . . . . . . . . .
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POINTS & CONDENSERS I

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	2	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	3												XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	4	XX XX	XX XX	5	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	6									XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

3. a plate inside the distributor (2 words)
6. to check the setting of a tool

DOWN:

1. moving out while turning around
2. how much something holds
3. unit joined into ignition primary circuit to lower battery voltage to coil (2 words)
4. sparks jumping across a point of touching
5. a tool that turns six-sided things (2 words)

POINTS & CONDENSERS I

ANSWER KEY

ACROSS:

3. BREAKER PLATE
6. CALIBRATE

DOWN:

1. CENTRIFUGAL
2. CAPACITY
3. BALLAST RESISTOR
4. ARCING
5. HEX KEY

```
      C             C
  B R E A K E R P L A T E
  A   N             P
  L   T             A
  L   R   A     H   C
C A L I B R A T E   I
  S   F   C     X   T
  T   U   I     K   Y
  R   G   N     E
  E   A   G     Y
  S   L
  I
  S
  T
  O
  R
```

POINTS & CONDENSERS II

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	1			2			3						XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	4			5					XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	6					XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

1. a unit used to step up battery voltage to fire spark plugs (2 words)
4. a pin on the shaft that allows parts to move (2 words)
6. a small amount

DOWN:

1. lighting fuel with a spark for gas engine or with heat of compression for diesel
2. the engine running at a slow speed with throttle closed
3. a high speed voltmeter that shows the result on a screen like a TV
5. a tool to measure the resistance in a unit

POINTS & CONDENSERS

ANSWER KEY

ACROSS:

1. IGNITION COIL
4. PIVOT PIN
6. MICRO

DOWN:

1. IGNITION
2. IDLE
3. OSCILLOSCOPE
5. OHMMETER

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I G N I T I O N C O I L

G     D     S

N     L     C

I     E   P I V O T P I N

T           L   H

I           L   M

O   M I C R O   M

N           S   E

            C   T

            O   E

            P   R

            E
```

POINTS & CONDENSERS III

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	2									XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	3									4	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	5	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	7						XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. the amount of differences in a measurement that is all right
3. instrument used to show the speed of the engine in RPM (revolutions per minute)
7. electric contacts in electric system to make high voltage

DOWN:

1. wiring used for sending low current to points (2 words)
4. the turning around part of a machine
5. a device put in a circuit to lower voltage

POINTS & CONDENSERS III

ANSWER KEY

ACROSS:		DOWN:	
2.	TOLERANCE	1.	PRIMARY WIRE
3.	TACHOMETER	4.	ROTOR
7.	POINTS	5.	RESISTOR

```
          P
  T O L E R A N C E
          I
T A C H O M E T E R
          A       O
          R       T
          Y       O
          W       R
          I   R
          R   E
          E   S
              I
    P O I N T S
              T
              O
              R
```

POINTS & CONDENSERS IV

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	1					2					XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	3	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	4													XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	5					XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

1. an instrument that measures dwell (2 words)
4. two points that can move to open or close (2 words)
5. the time that the distributor points are closed during ignition cycle

DOWN:

2. 1/1,000,000 of unit of capacitance
3. a device used to work the points

POINTS & CONDENSERS IV

ANSWER KEY

ACROSS:		DOWN:	
1.	DWELL METER	2.	MICROFARADS
4.	BREAKER POINTS	3.	CAM
5.	DWELL		

```
D W E L L M E T E R
          I
          C   C
        B R E A K E R P O I N T S
          O   M
          F
          A
          R
          A
          D W E L L
          S
```

LEARNING WORDS USED IN SETTING IGNITION TIMING

INTRODUCTION

Ignition must occur at just the right time for proper fuel burning at low engine RPM. The best time for the spark to occur in the cylinder is just before the piston gets to the top of the compression stroke. At faster engine speeds the spark has to be introduced earlier. Since the fuel burns at a fairly fixed rate, the piston may be too far down into the cylinder to achieve maximum pressure on the piston and power loss will result. Getting the spark into the cylinder at the correct time is called ignition timing. In this unit you will learn the technical vocabulary related to ignition timing.

PERFORMANCE OBJECTIVES

You will match 15 words used in setting ignition timing with their definitions. Your teacher will provide a list of words and definitions. You should match at least 12 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

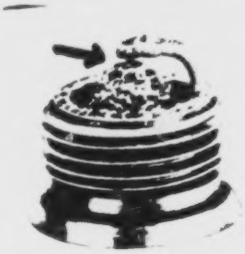
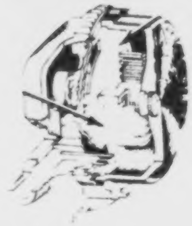
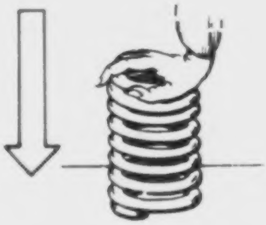
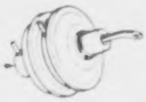
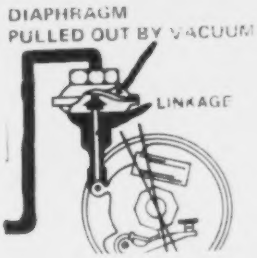
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

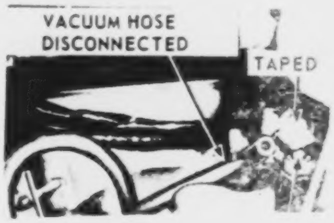
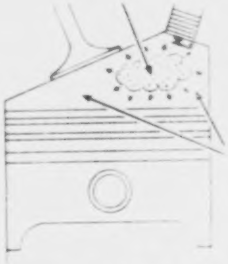
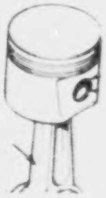
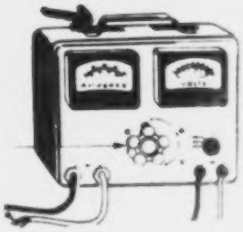
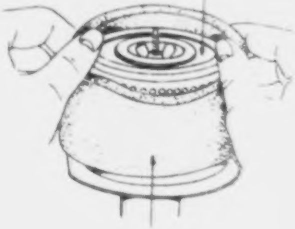
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

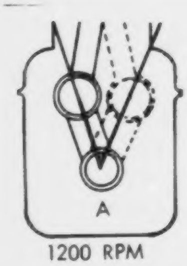
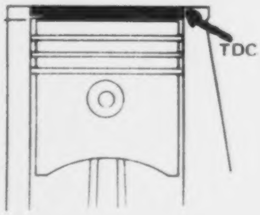
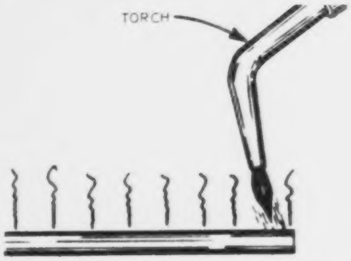
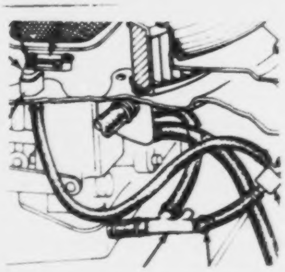
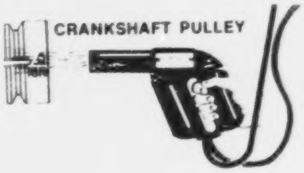
SET IGNITION TIMING

abnormal (ab nor mal)	not all right	
choke (choke)	a device in the carburetor (car bu re tor) to give a cold engine more gasoline for easier starting	
depress (de press)	to **press** down	
diaphragm (di a phragm)	a thin, flexible disc that moves with a small amount of pressure	
disconnect (dis con nect)	to separate or pull apart	 DIAPHRAGM PULLED OUT BY VACUUM LINKAGE

SET IGNITION TIMING

dual diaphragm (dual di a phragm) vacuum advance unit (vac u um ad vance u nit)	a unit that changes the timing of the ignition (ig ni tion)	
ignition timing (ig ni tion tim ing)	causing combustion to take place when the piston is in the right position	
piston (pis ton)	a part that moves in the cylinder and transfers the force of combustion to the piston rod and crank shaft	
portable (port able)	can be moved easily from one place to another	
procedure (pro ce dure)	the order in which things should be done	

SET IGNITION TIMING

RPM (RPM)	revolutions per minute	
TDC (TDC)	top dead center	
thermal (ther mal)	**heat**	
vacuum hose (vac u um hose)	a hose in which air pressure (pres sure) is lower than that outside the hose	
vibration (vi bra tion) damper (damp er)	a device that is fastened to the front of the crankshaft; decreases vibration	 CRANKSHAFT PULLEY

IGNITION TIMING

V	I	B	R	A	T	I	O	N	D	A	M	P	E	R	M	Z	V
U	U	W	U	R	V	J	G	E	J	K	O	C	K	B	D	W	J
V	F	A	Q	R	L	K	R	P	M	S	F	S	P	J	D	Q	R
J	D	T	D	E	C	R	K	E	Y	V	O	O	W	K	C	R	S
P	R	O	C	E	D	U	R	E	K	G	Y	A	W	I	R	U	D
O	M	K	B	G	P	H	U	D	L	H	X	N	E	L	I	N	F
X	Q	O	J	E	Z	V	Z	U	Q	R	N	M	G	N	A	R	N
T	W	H	F	H	L	N	L	X	K	C	F	D	M	U	O	U	J
D	I	S	C	O	N	N	E	C	T	A	B	N	O	R	M	A	L
P	O	R	T	A	B	L	E	K	Y	S	C	H	O	K	E	X	I
I	O	T	B	R	S	T	D	E	P	R	E	S	S	B	X	N	Y
Q	I	K	L	V	Z	H	A	T	Q	J	J	H	P	Q	O	T	L
I	G	N	I	T	I	O	N	T	I	M	I	N	G	Q	K	S	Q
N	I	L	G	C	U	J	D	I	A	P	H	R	A	G	M	A	Y
I	C	Y	L	B	E	T	R	D	H	E	I	L	R	K	E	X	X
V	J	J	C	J	H	B	H	D	X	K	J	P	S	N	I	M	P
O	H	D	U	Z	I	B	N	V	A	E	B	T	W	T	D	C	C
V	A	C	U	U	M	H	O	S	E	A	L	E	P	K	V	T	W
Z	P	I	S	T	O	N	M	U	K	V	T	H	E	R	M	A	L

Can you find these words?

VIBRATION DAMPER
DISCONNECT
PORTABLE
THERMAL
RPM

IGNITION TIMING
PROCEDURE
CHOKE
PISTON
TDC

VACUUM HOSE
DIAPHRAGM
ABNORMAL
DEPRESS

ACROSS

IGNITION TIMING

ANSWER KEY

```
V I B R A T I O N D A M P E R . . .
. . . . . . . . . . . . . . . . . .
. . . . . . . R P M . . . . . . . .
. . . . . . . . . . . . . . . . . .
P R O C E D U R E . . . . . . . . .
. . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . .
D I S C O N N E C T A B N O R M A L
P O R T A B L E . . . C H O K E . .
. . . . . . . D E P R E S S . . . .
. . . . . . . . . . . . . . . . . .
I G N I T I O N T I M I N G . . . .
. . . . . . . D I A P H R A G M . .
. . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . .

. . . . . . . . . . . . . . T D C .
V A C U U M H O S E . . . . . . . .
. P I S T O N . . . . T H E R M A L
```

IGNITION TIMING

O O D T N N F N K P I S T O N O B T E K K
J L M F N E T R T T D E P R E S S O F Q B
P J H X F F D B F J I L X Q W R S U E M V
B Y Z B S B C H O K E P R P M S X H X K P
M V I U E S W P E S P M D R V A I V M Z R
A Y X U L O V I B R A T I O N D A M P E R
O U O V D N H G F R W K S C O Q K S P D K
W H D T B R Q N W P J Z C E U Q Y L L T Y
U Y J L D N D I Z R P K O D T W I P R U A
F D F M S G Z T T V L G N U K M B R N P F
C I W T U Z K I I B A T N R E Y N G G K N
V A C U U M H O S E B H E E I N R X L F S
H P I C X I C N M Z N E C K C X D C F M C
T H E Z Y I R T D P O R T A B L E R N E T
J R P H I W H I N B R M G E X D E B N Y N
J A Q V B U K M R U M A G F X P C U B G I
U G E P T F V I D Y A L X B P W E O B Z S
N M W Z V B D N G P L F X C C E C T L N E
O T W S V O N G N O J M B A D N U D Z X L

Can you find these words?

VIBRATION DAMPER
DISCONNECT
PORTABLE
THERMAL
RPM
IGNITION TIMING
PROCEDURE
CHOKE
PISTON
TDC
VACUUM HOSE
DIAPHRAGM
ABNORMAL
DEPRESS

ACROSS/DOWN

IGNITION TIMING

ANSWER KEY

```
. . . . . . . . . P I S T O N . . . . . .
. . . . . . T . . . D E P R E S S . . . .
. . . . . . D . . . . . . . . . . . . . .
. . . . . . C H O K E . R P M . . . . . .
. . . . . . . . . . . . D R . . . . . . .
. . . . . . V I B R A T I O N D A M P E R
. . . . . . . G . . . . S C . . . . . . .
. . . . . . . N . . . . C E . . . . . . .
. . . . . . . I . . . . O D . . . . . . .
. D . . . . . T . . . . N U . . . . . . .
. I . . . . . I . . A T N R . . . . . . .
V A C U U M H O S E B H E E . . . . . . .
. P . . . . . N . . N E C . . . . . . . .
. H . . . . . T . P O R T A B L E . . . .
. R . . . . . I . . R M . . . . . . . . .
. A . . . . . M . . M A . . . . . . . . .
. G . . . . . I . . A L . . . . . . . . .
. M . . . . . N . . L . . . . . . . . . .
. . . . . . . G . . . . . . . . . . . . .
```

AM-5-15

IGNITION TIMING

A	P	U	A	H	W	J	S	E	O	W	W	R	X	H	Z	O	J	Z	Q
H	G	P	Y	F	G	T	R	Q	R	M	R	A	I	Q	Q	Z	T	Y	S
G	O	L	Z	T	V	U	K	V	I	D	V	I	A	K	D	C	U	E	B
U	J	W	F	X	D	V	A	C	U	U	M	H	O	S	E	S	P	C	L
B	P	I	L	E	I	I	G	N	I	T	I	O	N	T	I	M	I	N	G
M	P	M	C	B	A	B	S	W	X	I	E	J	M	X	D	J	S	R	I
K	B	O	V	T	P	R	E	C	V	K	W	Y	Q	O	K	S	I	H	V
V	R	L	O	W	H	A	E	T	O	Z	L	E	X	Q	E	R	Q	N	O
P	K	R	U	T	R	T	S	H	F	N	H	K	W	R	N	G	O	Z	G
S	A	Y	G	P	A	I	C	E	Z	O	N	X	P	A	I	Z	B	P	D
Z	I	W	A	P	G	O	G	R	R	T	P	E	P	Q	N	S	X	G	Z
H	M	V	B	O	M	N	I	M	G	B	D	F	C	Q	Z	B	T	J	Z
T	Y	P	O	R	T	A	B	L	E	K	E	C	M	T	J	G	C	J	R
X	U	I	R	T	T	M	E	Q	O	R	Q	O	J	B	V	T	M	C	B
S	Z	S	M	W	P	P	B	W	D	V	L	M	R	Y	B	N	E	K	H
S	D	T	A	R	T	E	X	X	M	H	T	O	I	W	A	K	Z	O	A
J	P	O	L	J	C	R	T	B	Q	Z	C	L	Q	N	R	N	K	E	O
F	R	N	I	S	S	X	S	K	J	Y	Z	G	I	U	X	F	A	E	C

Can you find these words?

VIBRATION DAMPER
DISCONNECT
PORTABLE
THERMAL
RPM
IGNITION TIMING
PROCEDURE
CHOKE
PISTON
TDC
VACUUM HOSE
DIAPHRAGM
ABNORMAL
DEPRESS

ACROSS/DOWN/DIAGONAL

IGNITION TIMING

ANSWER KEY

```
. . . . . . . . E . . . . . . . . . . .
. . . . . . . R . . . . . . . . . . . .
. . . . . . U . . . . . . . . . . . . .
. . . . . D V A C U U M H O S E . . . .
. . . . E I I G N I T I O N T I M I N G
. . . C . A B S . . . E . . . . . S . .
. . O . . P R . C . K . . . . . S . . .
. R . . . H A . T . . . . . . E . . . .
P . . . . R T . H . N . . . R . . . . .
. . . . . A I C E . . N . P . . . . . .
. . . A . G O . R . T . E . . . . . . .
. . . B . M N . M . . D . C . . . . . .
. . P O R T A B L E . . C . T . . . . .
. . I R . . M . . . . . . . . . . . . .
. . S M . P P . . . . . . . . . . . . .
. . T A R . E . . . . . . . . . . . . .
. . O L . . R . . . . . . . . . . . . .
. . N . . . . . . . . . . . . . . . . .
```

IGNITION TIMING I

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	2									XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	3					XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	5								XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	6							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. a thin flexible disc that moves with a small amount of pressure
3. a device in the carburetor to make a richer mixture and help an engine to start
5. not all right
6. to press down

DOWN:

2. to separate

IGNITION TIMING I

ANSWER KEY

ACROSS:

2. DIAPHRAGM
3. CHOKE
5. ABNORMAL
6. DEPRESS

DOWN:

2. DISCONNECT

```
            D I A P H R A G M
            I
            S
C H O K E   C
            O
        A B N O R M A L
            N
          D E P R E S S
            C
            T
```

IGNITION TIMING II

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1								XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	2	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	3														XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	4							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	5			XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

1. can be moved easily from one place to another
3. causing combustion to take place when the piston is in the right position
4. heat
5. Revolutions Per Minute

DOWN:

1. the order in which things should be done
2. part that can move, fitted to a cylinder that moves up & down as the crankshaft turns

IGNITION TIMING II

ANSWER KEY

ACROSS:		DOWN:	
1.	PORTABLE	1.	PROCEDURE
3.	IGNITION TIMING	2.	PISTON
4.	THERMAL		
5.	RPM		

```
            P O R T A B L E
P           R
I G N I T I O N T I M I N G
S           C
T       T H E R M A L
O           D
N           U
            R P M
            E
```

LEARNING WORDS USED IN MAINTAINING SPARK PLUGS

INTRODUCTION

Many engine problems can be caused by a defective or burned spark plug. Most manufacturers will recommend replacing spark plugs after the automobile has been driven a certain number of miles. Occasionally a single plug will break down before the complete set does; in this case a single plug replacement may become necessary. In this unit you will learn the technical vocabulary related to spark plugs.

PERFORMANCE OBJECTIVES

You will match 15 words used in maintaining spark plugs with their definitions. Your teacher will provide a list of words and definitions. You should match at least 12 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.

2. COVER **only** the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER **all** rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

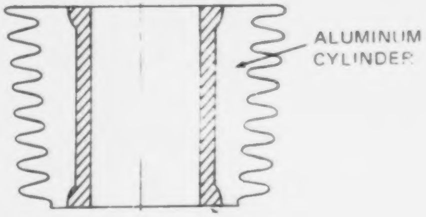
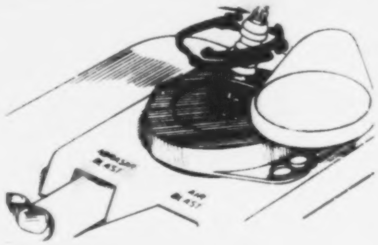
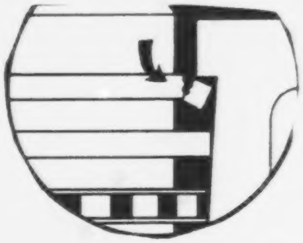
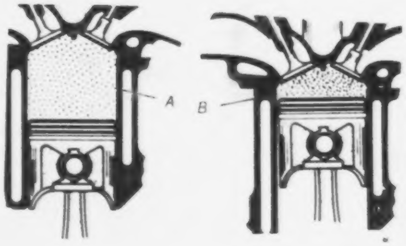
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

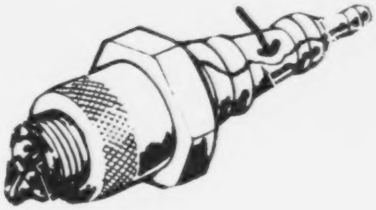
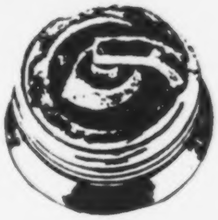
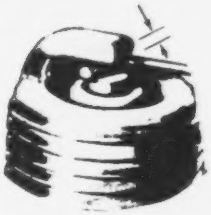
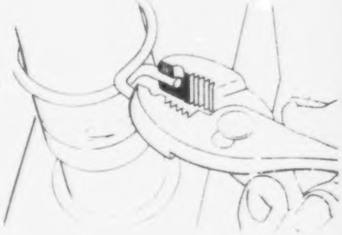
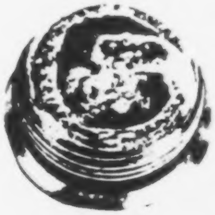
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

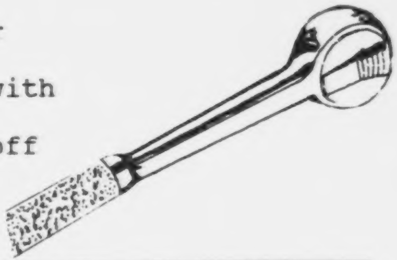
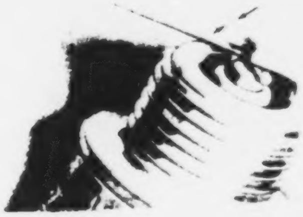
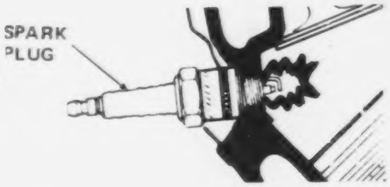
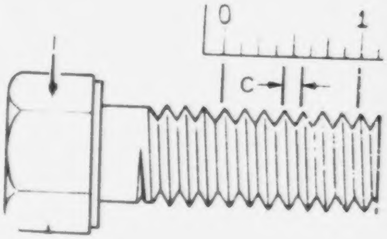
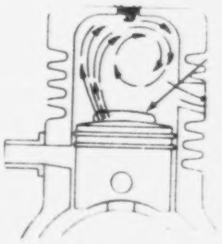
MAINTAINING SPARK PLUGS

aluminum (a lu mi num)	a light weight silver colored metal	
blast jet (blast jet)	sand and high air pressure used to clean spark plugs	
brittle (brit tle)	easy to break	
carbon (car bon)	hard or soft black deposits left on parts after fuel burns	CARBON FOULED
compressed air (com pressed air)	air that is squeezed into a small space	

MAINTAINING SPARK PLUGS

defective (de fec tive)	having a weak area or something wrong	
deposit fouling (de pos it foul ing)	carbon build up on spark plugs	
gap (gap)	a space between two things (as spark plug electrodes)	
install (in stall)	to fasten a part or accessory into place	
oil fouling (oil foul ing)	oil on the spark plugs that keeps them from firing	

MAINTAINING SPARK PLUGS

ratchet (ratch et)	a tool which turns in either direction you select, used with sockets (sock ets) to take off or tighten nuts or bolts	
regapping (re gap ping)	resetting the space between spark plug electrodes	
spark plug (spark plug)	a device that ignites the fuel mixture with an electric spark	
threaded (thread ed)	ridges cut on a nut or a screw	
turbulence (tur bu lence)	a strong swirling agitation of air or water	

SPARK PLUGS

```
D E P O S I T F O U L I N G R A T C H E T
B L A S T J E T A R C U A Z S R N C H U E
Z K K W X E L G T C F D I I S H G G T Z M
B R I T T L E Q H M T W I B L O J Y D Y M
B R X K G P U Q D I P H O B V H B T W C K
N E Q F F U U D E F E C T I V E N P D L T
M P B C T K V C O M P R E S S E D A I R F
A L U M I N U M L Y L X J L L A G E Z S V
Z F G F F G Z B B J S X C R K L Z J Z C V
M P X I O X D L I C M L W M L A F I X S Z
H W R E G A P P I N G R J U R Y L Z I Y N
H C V V U O D C K H V W L I W Z Y K N G Q
G A P Z W T I L J G U F I A A V R U F S Z
I N S T A L L E D T H R E A D E D H I J S
F O U L I N G P B V X T D K U P Z H I Y D
X J W G D S P A R K P L U G S H Q J H V O
J E L B R J Y K J B Z K R J O W B Y I C D
Y X L K D W X T U U L Z N Q L B E J E O B
T U R B U L E N C E Z H Z N H T M R O D I
```

Can you find these words?

DEPOSIT FOULING
SPARK PLUGS
DEFECTIVE
ALUMINUM
BRITTLE

COMPRESSED AIR
REGAPPING
THREADED
RATCHET
ARC

TURBULENCE
INSTALLED
BLAST JET
FOULING
GAP

ACROSS

SPARK PLUGS

ANSWER KEY

```
D E P O S I T F O U L I N G R A T C H E T
B L A S T J E T A R C . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
B R I T T L E . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . D E F E C T I V E . . . . .
. . . . . . . C O M P R E S S E D A I R .
A L U M I N U M . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . R E G A P P I N G . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
G A P . . . . . . . . . . . . . . . . . .
I N S T A L L E D T H R E A D E D . . . .
F O U L I N G . . . . . . . . . . . . . .
. . . . . S P A R K P L U G S . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
T U R B U L E N C E . . . . . . . . . . .
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SPARK PLUGS

Q J H J S E G K T H R E A D E D Y S M
U D L J P P X Z Z A E U R H M O M K L
M X Y B A F L H R M G N C H W A K O Y
S H I R R C I N S T A L L E D T S O I
S Z H G K O Z W U E P M K V Y Y A K W
W X R D P M P F X D P X E D S G F P E
L Y D N L P A L U M I N U M L A G F G
I G Z T U R B U L E N C E S L Y R Q A
S J R D G E N I E J G G C V Y W G X S
X F B F S S D S M B G B M E F R X A R
H Y U N O S E B X L A R W X S X D M B
J G J Z B E F R F A F A Q M P T A Z V
V D E R S D E P O S I T F O U L I N G
E I G M J A C J U T F C M H K U P D P
B K U X S I T H L J W H A M M E J O F
D W N K A R I J I E Q E F Y Y T M I I
V H X H V I V U N T L T U W X A G T W
B R I T T L E G G B U I G Z S K Q W X

Can you find these words?

DEPOSIT FOULING
SPARK PLUGS
DEFECTIVE
ALUMINUM
BRITTLE

COMPRESSED AIR
REGAPPING
THREADED
RATCHET
ARC

TURBULENCE
INSTALLED
BLAST JET
FOULING
GAP

ACROSS/DOWN

SPARK PLUGS

ANSWER KEY

```
. . . . S . . . T H R E A D E D . . .
. . . . P . . . . . E . R . . . . . .
. . . . A . . . . . G . C . . . . . .
. . . . R C I N S T A L L E D . . . .
. . . . K O . . . . P . . . . . . . .
. . . . P M . . . . P . . . . . . . .
. . . . L P A L U M I N U M . . . . .
. . . T U R B U L E N C E . . . . . .
. . . . G E . . . . G . . . . . . . .
. . . . S S D . . B . . . . . . . . .
. . . . . S E . . L . R . . . . . . .
. . . . . E F . F A . A . . . . . . .
. . . . . D E P O S I T F O U L I N G
. . . . . A C . U T . C . . . . . . .
. . . . . I T . L J . H . . . . . . .
. . . . . R I . I E . E . . . . . . .
. . . . . . V . N T . T . . . . . . .
B R I T T L E . G . . . . . . . . . .
```

SPARK PLUGS

U Q I R H V E C E N U F R A X X N Z R W Q

L M C E K T I O N H W P N C J P O L L S O

H Y B L P E P M A Y L E A U Q R Y E Q U U

B I E F Z I L P R M Q R P J I V M L F Q I

O Q X D K T U R B U L E N C E P Y I Q V J

H B L A S T J E T R A T C H E T R E V H Y

O M R D L Q M S A E X K I K U I O T K S A

D H A B N K A S A G U I D I Y B Q B C F X

G V J K L E I E S A R C E E U B N H A D I

I O B H N D C D E P O S I T F O U L I N G

F K R B R C E A J P A M K E I E K A R O V

Z O U K H D V I B I U R L I E N C Y T D A

A G A E A Z M R F N U T K H U R Y T S C Y

G P Q E E E S L I G T W V P X Y B Q I R N

K K R X A E R M F I N S T A L L E D J V O

Q H V U B C U P R V S G G W P U V E N Q E

T S X E K L M B D C A B P Z T Q G P Y X X

M G F J A C F R S R B H W T T B M S W K F

Can you find these words?

DEPOSIT FOULING
SPARK PLUGS
DEFECTIVE
ALUMINUM
BRITTLE

COMPRESSED AIR
REGAPPING
THREADED
RATCHET
ARC

TURBULENCE
INSTALLED
BLAST JET
FOULING
GAP

ACROSS/DOWN/DIAGONAL

SPARK PLUGS

ANSWER KEY

```
. . . . . . . C . . . . . . . . . . . . .
. . . . . . . O . . . . . . . . . . . . .
. . . . . . . M . . . . . . . . . . . . .
. . . . . . . P . . . . . . . . . . . . .
. . . . . T U R B U L E N C E . . . . . .
. B L A S T J E T R A T C H E T . . . . .
. . . . . . . S . E . . . . . . . . . . .
. . . . . . . S . G . . D . . . . . . . .
. . . . . . . E S A R C . E . . . . . . .
. . . . . . . D E P O S I T F O U L I N G
. . . . . . E A . P A M . E . E . . . . .
. . . . . D . I . I U R L . . . C . . . .
. . . . A . . R . N . T K . . . . T . . .
. . . E . . . . I G T . . P . . . . I . .
. . R . . . . M . I N S T A L L E D . V .
. H . . . . U . R . . . . . . U . . . . E
T . . . . L . B . . . . . . . . G . . . .
. . . . A . . . . . . . . . . . . S . . .
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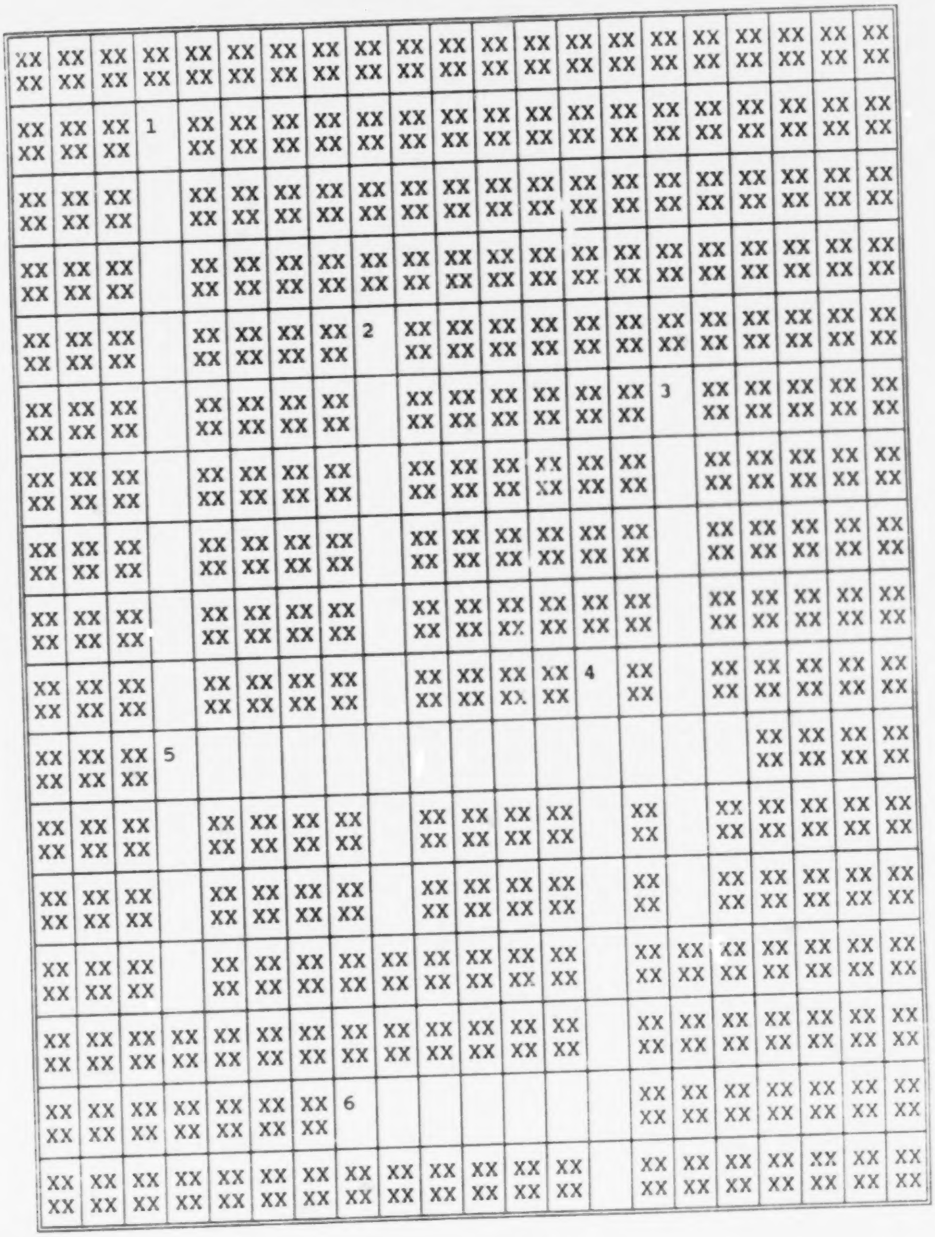
SPARK PLUGS I



ACROSS:

5. a lot of carbon on the spark plugs (2 words)
6. easy to break

DOWN:

1. air that is pushed together in a small space (2 words)
2. having a weak area or something wrong
3. a light, silver colored material
4. sand and strong air used to clean spark plugs (2 words)

SPARK PLUGS I

ANSWER KEY

ACROSS:

5. DEPOSIT FOULING
6. BRITTLE

DOWN:

1. COMPRESSED AIR
2. DEFECTIVE
3. ALUMINUM
4. BLAST JET

```
C
O
M
P         D
R         E             A
E         F             L
S         E             U
S         C             M
E         T         B   I
D E P O S I T F O U L I N G
A         V         A   U
I         E         S   M
R                   T
                    J
        B R I T T L E
                    T
```

AM-6-19

SPARK PLUGS II

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	1			2				XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	3								4	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	6							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
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XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

1. to fasten a part or accessory into place
3. to reset the gap between spark plug electrodes
6. a tool with handle used with sockets to take off or tighten nuts or bolts

DOWN:

2. a strong motion of air or water
4. a space between two things

SPARK PLUGS II

ANSWER KEY

ACROSS:

1. INSTALL
3. REGAPPING
6. RATCHET

DOWN:

2. TURBULENCE
4. GAP

```
    I N S T A L L
          U
          R E G A P P I N G
          B               A
          U               P
          L
R A T C H E T
          N
          C
          E
```

LEARNING WORDS USED IN MAINTAINING PRIMARY IGNITION CIRCUITS

INTRODUCTION

Much of the maintenance that is required on an automobile is performed on the ignition system which consists of two circuits: the primary and secondary. The primary circuit may be conventional (having breaker points), or it may be electronic (without breaker points). The primary circuit carries battery voltage during engine starting, or slightly reduced voltage during engine running, which is not capable of producing an electric arc sufficient in strength to ignite a fuel-air mixture in the engine combustion chambers. In this unit you will learn the technical vocabulary related to primary ignition circuits.

PERFORMANCE OBJECTIVES

You will match 4 words used in maintaining primary ignition circuits with their definitions. Your teacher will provide a list of words and definitions. You should match at least 3 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.

2. COVER **only** the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER **all** rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

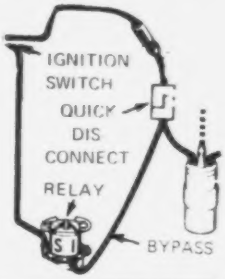
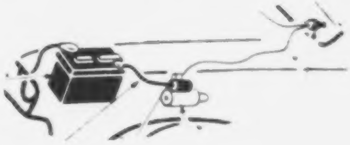
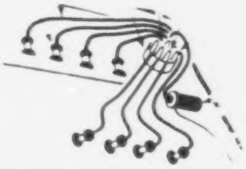
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

MAINTAINING PRIMARY IGNITION CIRCUITS

bypass circuit (by pass circuit)	move around the circuit by another path	 IGNITION SWITCH QUICK DIS CONNECT RELAY S I BYPASS
original (o rig i nal)	the first	
primary circuit (pri ma ry cir cuit)	the low voltage of the ignition (ig ni tion) system or battery voltage	
secondary circuit (sec on da ry cir cuit)	the high voltage of the ignition (ig ni tion) system or spark plug voltage	

PRIMARY IGNITION CIRCUITS

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	2	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	3														XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

3. the low voltage current of the ignition system (2 words)

DOWN:

2. the first

PRIMARY IGNITION CIRCUITS

ANSWER KEY

ACROSS:	DOWN:
3. PRIMARY CIRCUIT	2. ORIGINAL

```
        O
        R
        I
        G
        I
        N
P R I M A R Y C I R C U I T
        L
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LEARNING WORDS USED IN MAINTAINING FUEL FILTER

INTRODUCTION

The fuel system of the automobile is just as important as any other automotive system. Without fuel, the engine would not run, and without proper maintenance, it will not run correctly. The fuel filter is one important component of the fuel system. In this unit you will learn the technical vocabulary related to the fuel filter.

PERFORMANCE OBJECTIVES

You will match 13 words used in maintaining fuel filters with their definitions. Your teacher will provide a list of words and definitions. You should match at least 10 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.

2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

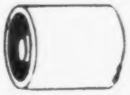
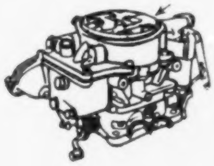
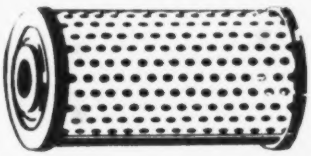
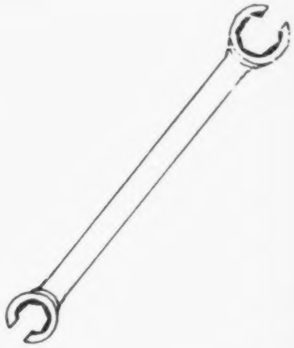
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

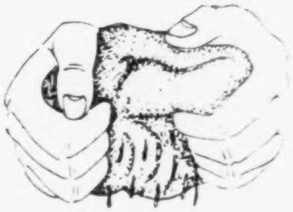
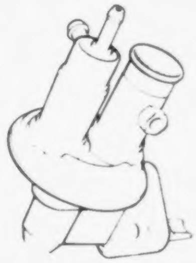
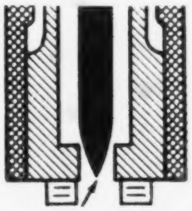
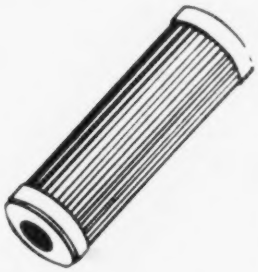
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

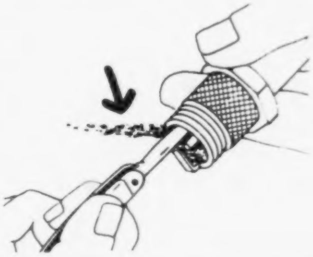
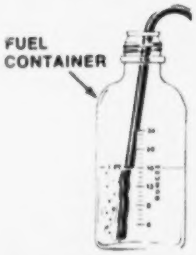
MAINTAINING FUEL FILTER

bronze (bronze)	a metal made of copper and tin sometimes used in a gas filter	
carburetor (car bu re tor)	a device that mixes air and fuel for the engine	
ceramic (cer am ic)	a material made from clay that has been baked in a kiln and slows down the flow of heat	
filter (fil ter)	a device with very small pores to remove dirt and other things from air, oil, water, or fuel	
flare-nut wrench (flare-nut wrench)	a tool to remove and replace the nut that holds joints on tubings such as fuel lines	

MAINTAINING FUEL FILTER

foreign (for eign)	comes from outside - does not belong, such as dirt in a carburetor	
fuel pump (fuel pump)	a device that pumps fuel from the gas tank to the carburetor (car bu re tor)	
jets (jets)	small holes used to meter the flow of fuel	
periodic (pe ri od ic)	from time to time	
pleated (pleat ed)	pressed into folds	

MAINTAINING FUEL FILTER

residue (res i due)	the part left over	
sintered bronze (sin tered bronze)	made of tiny beads of bronze welded together to form a fuel filter	
volume (vol ume)	how much space there is in an enclosure	

FUEL FILTER

S I N T E R E D B R O N Z E P A K Z R M Z

N I V B P B R O N Z E L P W F G A Q Z D X

R E S I D U E T S V L R O L D V L J M A A

M F W I S U M L C I Q J N Z U N K H F V O

V O L U M E U F K Z B J B F K P U Y L X D

H X E A H A H Y B V P Y U H R Y Y I C V L

Z M I N F G S U W Q C E R A M I C M O Q E

L Z P B J A J B A P X Z S R W S X F E C U

Z D J G C P E R I O D I C T V L L Q U U W

F X A H O O D A G K M Z V S Y T N Y Q X I

U W Y Y V U V D A N F O R E I G N P L K P

F L A R E N U T W R E N C H P L E A T E D

O S I C T C O N S E F I L T E R G T I Z Y

Z P W W X S G K S T U N V M C B R S O M S

F V W F H M S H P S A T Q V F A C P H A D

F U E L P U M P J E T S Y T Z A Q Q K X D

O Z E X Y G F A V Y K O L Z B O J J U T L

F Z C A Q K D H Y C E Q Z D G I R B E C C

C A R B U R E T O R K I L D C B N K S A F

Can you find these words?

SINTERED BRONZE
CARBURETOR
RESIDUE
CERAMIC
BRONZE

FLARE NUT WRENCH
PERIODIC
PLEATED
VOLUME

FUEL PUMP
FOREIGN
FILTER
JETS

ACROSS

FUEL FILTER

ANSWER KEY

```
S I N T E R E D B R O N Z E . . . . . . .
. . . . . B R O N Z E . . . . . . . . . .
R E S I D U E . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
V O L U M E . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . C E R A M I C . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . P E R I O D I C . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . F O R E I G N . . . .
F L A R E N U T W R E N C H P L E A T E D
. . . . . . . . . . F I L T E R . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
F U E L P U M P J E T S . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
C A R B U R E T O R . . . . . . . . . . .
```

FUEL FILTER

G F Z H Y K W E R Z P Y B O Y Y W D N Y
T Q I Y E S Z E S I H F R U J B O N F B
X U J A K U F I L F D F O R E I G N Q S
E W O J G P X Y B I M U N B T W L W P Z
U P L E A T E D D L T E Z H S H Q G U O
R E S I D U E Y F T F L E Q S K J V F T
O R Y L J E O N L E T P X S P S X V L S
J I A L O G Z C A R B U R E T O R I P F
V O L U M E K N R A Z M J F C Y U L Y N
X P C I S B P P E T C P C O E S X Q G G
I I W K M J S I N T E R E D B R O N Z E
B C K E T K J N U T U V L V G H B X J B
L T N S O Q M Z T L Z G T G B H I R A W
P U W O Z W C R W J Q V Z W L I I C A K
B U K M K V C E R A M I C O O M Q F X M
X V S U C D M R E G K O O A X Q S W P E
H S O V M E E I N X Z H E U R Z T A E H
M B J I O W K P C P Z Z L X G G G T P L
X S D Y H Z I I H A R R T U V T B R B S

Can you find these words?

SINTERED BRONZE
CARBURETOR
RESIDUE
CERAMIC
BRONZE
FLARE NUT WRENCH
PERIODIC
PLEATED
VOLUME
FUEL PUMP
FOREIGN
FILTER
JETS

ACROSS/DOWN

FUEL FILTER

ANSWER KEY

```
. . . . . . . . . . . . B . . . . . . .
. . . . . . . . . . . . R . J . . . . .
. . . . . . . . . F . F O R E I G N . .
. . . . . . . . . I . U N . T . . . . .
. P L E A T E D . L . E Z . S . . . . .
R E S I D U E . F T . L E . . . . . . .
. R . . . . . . L E . P . . . . . . . .
. I . . . . . C A R B U R E T O R . . .
V O L U M E . . R . . M . . . . . . . .
. D . . . . . . E . . P . . . . . . . .
. I . . . . S I N T E R E D B R O N Z E
. C . . . . . . U . . . . . . . . . . .
. . . . . . . . T . . . . . . . . . . .
. . . . . . . . W . . . . . . . . . . .
. . . . . . C E R A M I C . . . . . . .
. . . . . . . . E . . . . . . . . . . .
. . . . . . . . N . . . . . . . . . . .
. . . . . . . . C . . . . . . . . . . .
. . . . . . . . H . . . . . . . . . . .
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FUEL FILTER

V K P J T E O N M F H J T X L Q W R Z T E

L I R F O Y F N K A Q A A Y A B D A G Z W

N O P U C M R F A V N K W M L L I I N T T

F P M T E L G Y B L M U H D R J O O N S W

L Y C B F N B F E M C P B O W O R Z P I G

K Q P E T I B R E C M L T M R B M N D L P

N K F T L R L G O U R E S I D U E J J O W

X T J X P F K T P N R A L E R B W L W B P

P C V F S J U L E U Z T R J Z V E K Q W T

Z E L K E S E M B R J E T S S L F J O K Y

D R R A L U U R G N T D V S L D P O J R P

R A X I F L A R E N U T W R E N C H L G X

Y M I X O C Y D I K M T T H J E V T N E W

W I F V R D O S T B O C M E B P V I X Q I

U C V O E U I A V H E G Z T C T X C H D E

Y M J C I M E C B N U E Z H U C O Z Y D Y

C M R G G S B Z H E I K V P O H T R Z F X

C K U Z N W L G V M V T R J E V X Z E T U

Can you find these words?

SINTERED BRONZE
CARBURETOR
RESIDUE
CERAMIC
BRONZE
FLARE NUT WRENCH
PERIODIC
PLEATED
VOLUME
FUEL PUMP
FOREIGN
FILTER
JETS

ACROSS/DOWN/DIAGONAL

FUEL FILTER

ANSWER KEY

```
. . . . . . . . . . . . . . . . . . . . E
. . . . . . . . . . . . . . . . . . . Z .
. . . . . . . . . . . . . . . . . . N . .
. . . . . . . . . . . . . . R . . O . . .
. . . . F . B . . . . P . O . . R . . . .
. . . . . I . R . . M L T . . B . . . . .
. . . . . . L . O U R E S I D U E . . . .
. . . . . . . T P N R A . E . . . . . . .
P C . . . . . L E U Z T R . . . . . . . .
. E . . . . E M B R J E T S . . . . . . .
. R R . . U U R . . T D . . . . . . . . .
. A . I F L A R E N U T W R E N C H . . .
. M . . O C . . I . . . . . . . . . . . .
. I . V R D . S . . . . . . . . . . . . .
. C . . E . I . . . . . . . . . . . . . .
. . . . I . . C . . . . . . . . . . . . .
. . . . G . . . . . . . . . . . . . . . .
. . . . N . . . . . . . . . . . . . . . .
```

FUEL FILTER I

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	2	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	3						XX XX		XX XX	4							XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	5	XX XX	XX XX	XX XX	6														XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	7	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

3. device to remove dirt and other things from air, oil, water, or fuel
4. from some other place
6. a part in the filter between the fuel pump and carburetor (2 words)

DOWN:

1. a device that mixes air and fuel for the engine
2. a tool to use with the nut that holds joints on tubings (3 words)
4. a device that pumps fuel from the gas tank to the carburetor (2 words)
5. from time to time
7. how much space is in an object or area

FUEL FILTER I

ANSWER KEY

ACROSS:

3. FILTER
4. FOREIGN
6. SINTERED BRONZE

DOWN:

1. CARBURETOR
2. FLARE NUT WRENCH
4. FUEL PUMP
5. PERIODIC
7. VOLUME

									C									
							F		A									
							L		R									
							A		B									
		F	I	L	T	E	R		U		F	O	R	E	I	G	N	
							E		R		U							
P					S	I	N	T	E	R	E	D	B	R	O	N	Z	E
E							U		T		L							
R							T		O		P							
I							W		R		U							
O				V			R				M							
D	I	S	C	O	N	N	E	C	T		P							
I				L			N											
C				U														
				M														
				E														

FUEL FILTER II

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	2	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	3							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	4							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	5				XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

3. pressed into folds
4. a material made from fired clay that slows the flow of heat
5. small holes used to control the flow of fuel

DOWN:

1. metal usually made of copper and tin
2. the part left over

FUEL FILTER

ANSWER KEY

ACROSS:

3. PLEATED
4. CERAMIC
5. JETS

DOWN:

1. BRONZE
2. RESIDUE

```
  B

  R

  O       R

  N   P L E A T E D

  Z       S

C E R A M I C

          D

          U

        J E T S
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LEARNING WORDS USED IN SERVICING A CARBURETOR AIR CLEANER

INTRODUCTION

Air drawn into the engine must be as clean as possible. If dust or foreign matter is allowed to enter the engine's intake system, it acts as an abrasive that wears internal engine parts to a rough or undersized finish. Under extreme conditions, this could result in the need for a complete engine overhaul. Due to new emission control standards, air cleaners incorporate controls that improve cold engine performance and also limit certain pollutants that the engine produces. In this unit you will learn the technical vocabulary related to a carburetor air cleaner.

PERFORMANCE OBJECTIVES

You will match 16 words used in servicing a carburetor air cleaner with their definitions. Your teacher will provide a list of words and definitions. You should match at least 12 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER **only** the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER **all** rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

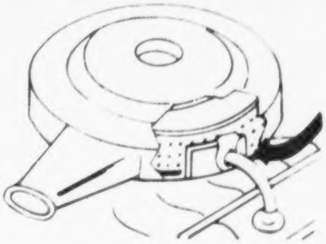
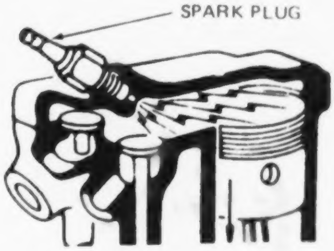
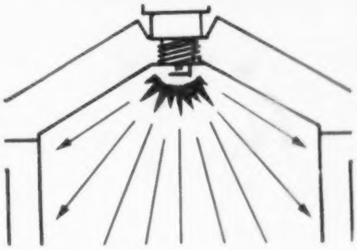
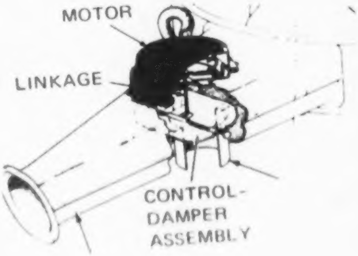
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

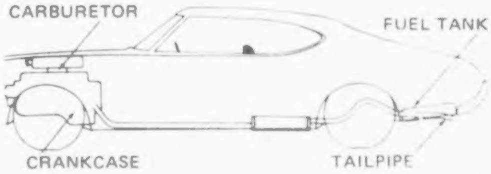
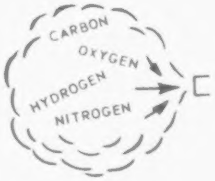
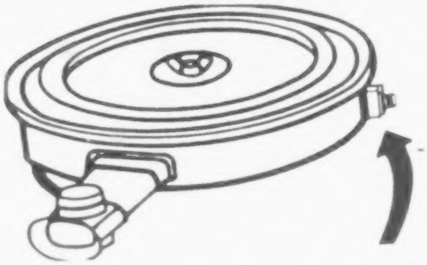
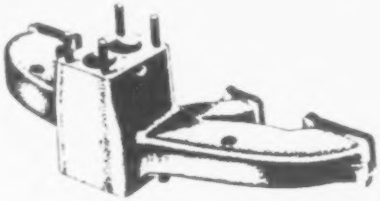
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

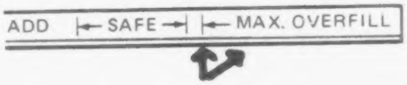
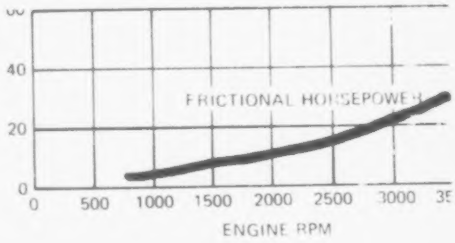
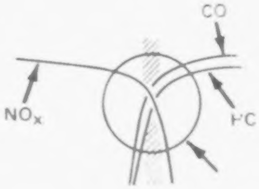
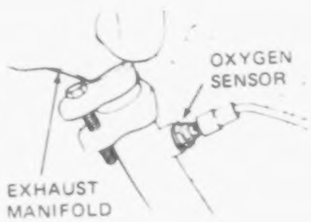
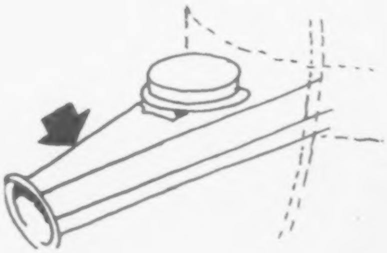
SERVICING CARBURETOR AIR CLEANER

accelerate (ac cel er ate)	to increase speed	
air cleaner (air clean er)	a device used to clean the air as it goes into the engine	
chamber (cham ber)	the area where gas burns in an engine	
combustion (com bus tion)	the rapid burning of air and fuel that makes heat	
damper (damp er)	a part inside the carburetor (car bu re tor) air cleaner that changes the flow of incoming air	 MOTOR LINKAGE CONTROL-DAMPER ASSEMBLY

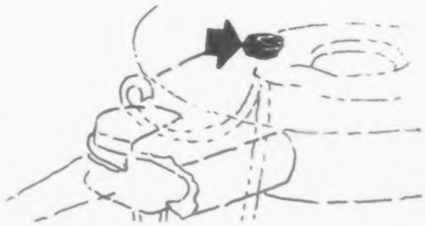
SERVICING CARBURETOR AIR CLEANER

emission (e mis sion)	the exhausting of waste gasses	 CARBURETOR FUEL TANK CRANKCASE TAILPIPE
exhaust (ex haust)	waste gasses from an engine	 CARBON OXYGEN HYDROGEN NITROGEN
external (ex ter nal)	outside	
intake (in take) manifold (man i fold)	passages that the air and fuel mixture flows through from the carburetor to each cylinder	
linkage (link age)	rods or levers that transfer movement from one unit to another	

SERVICING CARBURETOR AIR CLEANER

maximum (max i mum)	the most or the best	 ADD SAFE MAX. OVERFILL
performance (per form ance)	a measure of how something acts	
pollutant (pol lut ant)	a harmful material discharged into the air or water	
sensor (sen sor)	a device that detects and sends a signal	 OXYGEN SENSOR EXHAUST MANIFOLD
snorkel (snor kel)	a tube that admits hot or cool air to the air cleaner	

SERVICING CARBURETOR AIR CLEANER

temperature (tem per ature) sensor (sen sor)	a device that detects the air temperature in the air cleaner	

CARBURETOR AIR CLEANER

I N T A K E M A N I F O L D D F I Y F W S

H Q I V J J S F C O M B U S T I O N R B H

P O L L U T A N T O B T S F P P V D O R X

E M I S S I O N C H A M B E R P B L E H X

E X T E R N A L G D G S U Z X D K K B E Q

S P Z Z D H N Z X S B V R Q P J T J A V P

G G O M Y E H Z T D U P I K M A Q I Q D S

L R E X H A U S T U U A L G Z U O Z G G U

K F J Q A B B R L S B P Y B V L T I O K F

C J Y Q S R T Z R L I N K A G E Z R V N V

N U P U Y P M O E X T D S E N S O R Q D C

H A I P A X Y O H Z H T M T F C T U W S F

M A X I M U M T E H D M K F K D I F I X N

O T I E M P O Y O A P Z P L O Y W J N G S

H V D P U A X K L Y U E A C S M B J G I O

U E Z N E M T Y A I R C L E A N E R U O T

P E R F O R M A N C E O T H C M P S T A J

A C C E L E R A T E S N O R K E L Y A Q W

D A M P E R D V K T L P P V B Z L S S U D

Can you find these words?

INTAKE MANIFOLD
ACCELERATE
EMISSION
LINKAGE
CHAMBER

COMBUSTION
POLLUTANT
SNORKEL
SENSOR
EXHAUST

PERFORMANCE
AIR CLEANER
EXTERNAL
MAXIMUM
DAMPER

ACROSS

CARBURETOR AIR CLEANER

ANSWER KEY

```
I N T A K E M A N I F O L D . . . . . . .
. . . . . . . . C O M B U S T I O N . . .
P O L L U T A N T . . . . . . . . . . . .
E M I S S I O N C H A M B E R . . . . . .
E X T E R N A L . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . E X H A U S T . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . L I N K A G E . . . . .
. . . . . . . . . . . . S E N S O R . . .
. . . . . . . . . . . . . . . . . . . . .
M A X I M U M . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . A I R C L E A N E R . . .
P E R F O R M A N C E . . . . . . . . . .
A C C E L E R A T E S N O R K E L . . . .
D A M P E R . . . . . . . . . . . . . . .
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CARBURETOR AIR CLEANER

K C P K T V B K P L R F N D U T P Z X D X
M A J D D A M P E R I K Y U Q Y X U H I K
U O O S E N S O R T O E L Z P C U F Y K B
A O F N H T Z O F K R X M X O Q S B C W Z
C O M B U S T I O N O C I M L R H L N D H
C K C P U X S E R B W I R A L O V Y T N W
E S C K X E U T M J P F V X U N I S C B C
L X L N M X X A A J T Q T I T Y O D W S H
E U V R B A S I N T A K E M A N I F O L D
R Z L K C L O R C O T H X U N U K P L Q C
A S G Z F N U C E P N M T M T L S D D A D
T O W A R E M L D O E P E M I S S I O N P
E P Z L W B E E O S M Z R P E X H A U S T
Q D D O T Q D A T E E S N O R K E L L S O
W D P L Y U E N N O B J A Q R K K N F A Q
Q F N V L G H E B O H E L E U W Q N P W R
J P S N W J W R H A W H T V G B K S Z A S
B Y J L I N K A G E K J M I M I H S R Y Z
Q W V C H A M B E R K I R Z B R C C N R V

Can you find these words?

INTAKE MANIFOLD
ACCELERATE
EMISSION
LINKAGE
CHAMBER

COMBUSTION
POLLUTANT
SNORKEL
SENSOR
EXHAUST

PERFORMANCE
AIR CLEANER
EXTERNAL
MAXIMUM
DAMPER

ACROSS/DOWN

CARBURETOR AIR CLEANER

ANSWER KEY

```
. . . . . . . . P . . . . . . . . . . . .
. . . . D A M P E R . . . . . . . . . . .
. . . S E N S O R . . . . . P . . . . . .
A . . . . . . . F . . . . . O . . . . . .
C O M B U S T I O N . . . M L . . . . . .
C . . . . . . . R . . . . A L . . . . . .
E . . . . . . . M . . . . X U . . . . . .
L . . . . . . A A . . . . I T . . . . . .
E . . . . . . I N T A K E M A N I F O L D
R . . . . . . R C . . . X U N . . . . . .
A . . . . . . C E . . . T M T . . . . . .
T . . . . . . L . . . . E M I S S I O N .
E . . . . . . E . . . . R . E X H A U S T
. . . . . . . A . . . S N O R K E L . . .
. . . . . . . N . . . . A . . . . . . . .
. . . . . . . E . . . . L . . . . . . . .
. . . . . . . R . . . . . . . . . . . . .
. . . L I N K A G E . . . . . . . . . . .
. . . C H A M B E R . . . . . . . . . . .
```

CARBURETOR AIR CLEANER

F H E X H A U S T E S C I B U M E H R E N
P C T G Y C H A M B E R F L L Y Z L I G Q
Y B T V U C E C J Q V M T H R P C C G V O
Y L Y T W E X T E R N A L B H Q A B S F H
J P A P O L L U T A N T I U F L E G N U T
M I I J C E M I S S I O N B A U G O C K O
P E R F O R M A N C E D K C I X L T G H H
I P C N M A U I O T M T A S G R R X C I N
O S L W B T S O R A A A G W E T X Q M U H
Z W E U U E A R K A X K E C J L K F A P E
N A A N S A Q P E O I T E B P I J O I G M
G O N Q T Q E C L M M M U M N C P S V U T
D A E Y I R O K C O U P S D A M P E R R X
Y O R I O X Q V D S M M W O V N Q O A H O
P Q Q S N J K V Z E E X S T A B I O N X P
Q I N C X M M U Q O T A B Z L W L F Q N H
B E C V L G H G N O U D K W A A O N O W Q
S O Z O S O R Q U S A E C X D E P T J L Y
A Y G H S S F K B S W A C J K A G E D B D

Can you find these words?

INTAKE MANIFOLD
ACCELERATE
EMISSION
LINKAGE
CHAMBER

COMBUSTION
POLLUTANT
SNORKEL
SENSOR
EXHAUST

PERFORMANCE
AIR CLEANER
EXTERNAL
MAXIMUM
DAMPER

ACROSS/DOWN/DIAGONAL

CARBURETOR AIR CLEANER

ANSWER KEY

```
. . E X H A U S T . . . . . . . . . . . .
. . . . . C H A M B E R . . . . . . . . .
. . . . . C . . . . . . . . . . . . . . .
. . . . . E X T E R N A L . . . . . . . .
. . A P O L L U T A N T I . . . . . . . .
. . I . C E M I S S I O N . . . . . . . .
P E R F O R M A N C E . K . . . . . . . .
. . C . M A . . O T M . A . . . . . . . .
. . L . B T . . R . A . G . . . . . . . .
. . E . U E . . K . X K E . . . . . . . .
. . A . S . . . E . I . E . . . . . . . .
. . N . T . . . L . M . . M . . . . . . .
. . E . I R . . . . U . . D A M P E R . .
. . R . O . . . . . M . . . . N . . . . .
. . . S N . . . . . . . . . . . I . . . .
. . N . . . . . . . . . . . . . . F . . .
. E . . . . . . . . . . . . . . . . O . .
S . . . . . . . . . . . . . . . . . . L .
. . . . . . . . . . . . . . . . . . . . D
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CARBURETOR AIR CLEANER I

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	2	3									XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	4							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	6							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	7													8	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. to increase speed
4. the area where gas burns in an engine
6. waste vapor from an engine
7. area in the engine that the air and fuel mixture flows through (2 words)

DOWN:

3. the action of air and fuel that makes heat
6. outside
8. a part inside the carburetor air cleaner that slows the flow

CARBURETOR AIR CLEANER I

ANSWER KEY

ACROSS:		DOWN:	
2.	ACCELERATE	3.	COMBUSTION
4.	CHAMBER	6.	EXTERNAL
6.	EXHAUST	8.	DAMPER
7.	INTAKEMANIFOLD		

```
    A C C E L E R A T E
      O
C H A M B E R
      B
      U
      S   E X H A U S T
      T   X
      I N T A K E M A N I F O L D
      O   E                     A
      N   R                     M
          N                     P
          A                     E
          L                     R
```

CARBURETOR AIR CLEANER II

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	2	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	3							XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	5											XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	6							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	7							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

3. a device that controls hot air in the air cleaner
5. how something acts
6. the most or the best
7. rods that can move which join one unit to another

DOWN:

1. a device that detects and sends a signal
2. a harmful material discharged into the air or water

CARBURETOR AIR CLEANER II

ANSWER KEY

ACROSS:

3. SNORKEL
5. PERFORMANCE
6. MAXIMUM
7. LINKAGE

DOWN:

1. SENSOR
2. POLLUTANT

```
                  S       P

                  E   S N O R K E L

                  N       L

                  S       L

                  O       U

                  R       T

                          A

          P E R F O R M A N C E

                          T

            M A X I M U M

L I N K A G E
```

LEARNING WORDS USED IN REPAIRING AND REPLACING FUEL LINES AND HOSES

INTRODUCTION

Fuel lines and hoses are generally considered to be trouble-free. It is often taken for granted that these parts do not fail. However, fuel lines or hoses often do fail. Flexible lines may become porous or flake off in their interior. Porous lines will allow air to enter the fuel on the suction side of the fuel pump, while clogged lines will restrict the flow of fuel to the pump or carburetor. Leaks may appear anywhere along the fuel feeder system but are very noticeable on the pressure side of the fuel pump. Tank-to-fuel pump metal lines may rub through due to friction of parts moving against each other. In this unit you will learn the technical vocabulary related to fuel lines and hoses.

PERFORMANCE OBJECTIVES

You will match 9 words used in repairing and replacing fuel lines and hoses with their definitions. Your teacher will provide a list of words and definitions. You should match at least 7 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

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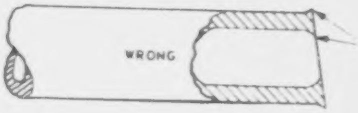
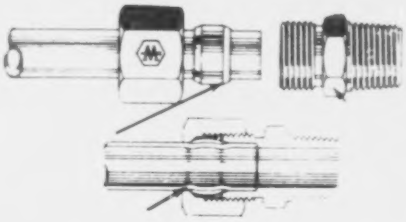
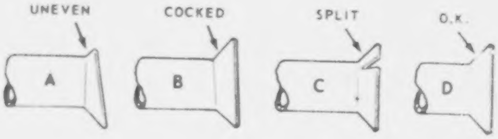
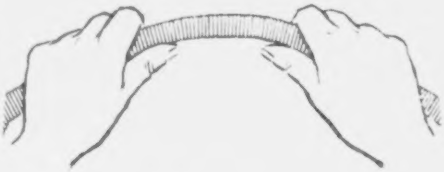
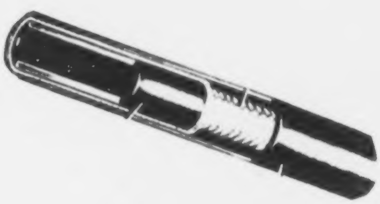
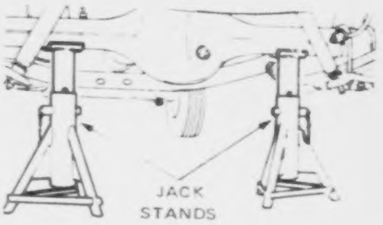
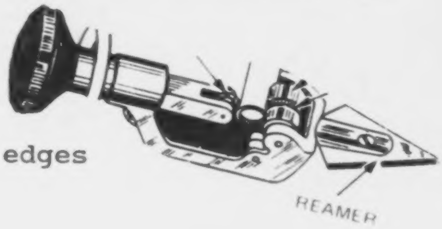
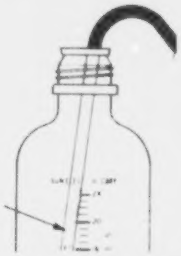
REPAIRING AND REPLACING FUEL LINES AND HOSES

burrs (burrs)	rough edges on metal after it has been cut	
compression (com pres sion)	squeezing matter into a smaller space	
flare (flare)	to curve outward	
flexible (flex i ble)	something that can bend easily and not break	
neoprene (ne o prene)	a rubber that is resistant to chemicals	

REPAIRING AND REPLACING FUEL LINES AND HOSES

porous (po rous)	having holes that let liquid or gas pass through	
precaution (pre cau tion)	taking care before you act so that nothing wrong happens	
ream (ream)	to make a whole bigger by using a tool with cutting edges	
siphon (si phon)	a tube that carries liquid up over the edge of a container	

AM-10-9

FUEL LINES & HOSES

C O M P R E S S I O N F L E X I B L E O M

S O D T I T A D P S T Z O H W M S S P D C

G P L T M L P R E C A U T I O N O Z C E I

X G D G C K T Y W X A Q O B R S Y P G W H

F Y E J O U C D E O Z R P O R O U S Y J Y

Y V K N S M K F V G A H B N G I Z P G N U

A U Q Y H T B W Z W W G E P X A D V D H X

A C X E A Z V E C M J M F R S I P H O N M

Q V A H J I X Q V O H E O B F V Y W Z Y H

O B T Y O R T M Y X Q H H A L I F L A W P

D F L D P K R F K P M O F O E Y X Y C G E

I Y F D T P T O F K T X Q L F L A R E F Q

X O O B E U K J N H A B A O K O B Y W Z I

B U R R S J S Z T E L V N I Y D Z P D L I

D J I T E J V T L J P X C J X N B O R H M

B T F S U T L Z M D S R W S R M S T Y R D

Z X N Z M C W F T R E A M I Q T Y H I O Y

N E O P R E N E O G M L B U H B U R U F A

Can you find these words?

COMPRESSION
FLEXIBLE
BURRS
PRECAUTION
SIPHON
REAM
NEOPRENE
POROUS
FLARE

ACROSS

FUEL LINES & HOSES

ANSWER KEY

```
C O M P R E S S I O N F L E X I B L E . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . P R E C A U T I O N . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . P O R O U S . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . S I P H O N .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . F L A R E . .
. . . . . . . . . . . . . . . . . . . . .
B U R R S . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . R E A M . . . . . . . .
N E O P R E N E . . . . . . . . . . . . .
```

FUEL LINES & HOSES

X	Q	U	J	F	H	F	K	Y	Y	E	S	T	E	N	W	U	D	Q	Y
S	I	P	H	O	N	G	Z	B	A	N	A	T	I	J	T	L	P	G	X
D	T	S	K	R	E	P	F	L	F	W	A	A	Q	I	K	P	Q	T	U
H	F	U	S	S	O	O	L	V	L	G	O	A	S	H	I	C	E	R	R
R	F	T	G	G	P	R	E	C	A	U	T	I	O	N	S	G	X	Y	N
C	Q	Y	E	C	R	O	X	O	R	N	A	A	E	W	G	O	C	A	K
N	Y	F	N	P	E	U	I	M	E	S	W	O	R	D	H	B	R	P	S
N	G	Y	W	L	N	S	B	P	V	Q	U	A	J	F	E	S	W	I	N
R	H	Z	R	D	E	T	L	R	E	K	N	P	O	X	K	G	L	L	F
W	E	O	T	N	S	Q	E	E	B	Y	Q	W	L	I	X	S	O	P	B
H	D	W	X	B	U	R	R	S	X	T	T	C	P	V	R	E	U	D	I
O	I	X	C	U	V	E	J	S	B	I	J	Z	Y	B	O	F	O	N	P
W	S	X	X	B	S	A	D	I	W	N	J	Q	R	B	R	W	U	E	T
P	T	J	G	Z	S	M	G	O	E	V	G	P	D	A	D	Q	I	E	T
L	V	Y	O	Q	B	P	H	N	Y	B	J	X	B	Q	M	Y	K	E	M

Can you find these words?

COMPRESSION
FLEXIBLE
BURRS
PRECAUTION
SIPHON
REAM
NEOPRENE
POROUS
FLARE

ACROSS/DOWN

FUEL LINES & HOSES

ANSWER KEY

```
. . . . . . . . . . . . . . . . . . . .
S I P H O N . . . . . . . . . . . . . .
. . . . . E P F . F . . . . . . . . . .
. . . . . O O L . L . . . . . . . . . .
. . . . . P R E C A U T I O N . . . . .
. . . . . R O X O R . . . . . . . . . .
. . . . . E U I M E . . . . . . . . . .
. . . . . N S B P . . . . . . . . . . .
. . . . . E . L R . . . . . . . . . . .
. . . . . . . E E . . . . . . . . . . .
. . . . B U R R S . . . . . . . . . . .
. . . . . . E . S . . . . . . . . . . .
. . . . . . A . I . . . . . . . . . . .
. . . . . . M . O . . . . . . . . . . .
. . . . . . . . N . . . . . . . . . . .
```

FUEL LINES & HOSES

M	S	Y	Y	A	S	H	B	P	T	Y	V	D	S	H	Q	N
X	U	W	G	F	P	W	P	Q	R	Z	Z	G	K	V	O	A
J	Z	D	Q	O	E	Y	I	I	B	Q	H	U	N	I	Z	G
S	W	Q	Z	F	S	H	C	D	W	I	U	Z	S	V	O	H
L	C	C	N	W	E	O	B	O	M	N	S	S	S	P	Q	J
A	O	Q	V	Z	M	Q	R	E	F	L	E	X	I	B	L	E
J	J	U	E	P	M	G	B	U	R	R	S	A	P	B	E	G
Z	X	A	N	Z	O	Z	Q	R	P	A	A	N	H	N	B	T
E	U	Y	A	V	T	R	K	M	Y	S	T	A	O	T	Q	H
I	H	F	L	T	N	E	O	P	R	E	N	E	N	Z	X	Q
Y	H	H	P	R	E	C	A	U	T	I	O	N	S	L	E	C
N	K	U	A	R	E	S	N	K	S	U	X	R	Q	E	K	A
F	W	G	A	T	V	A	B	R	U	W	T	Y	M	D	C	F
X	J	L	A	K	B	U	M	Z	C	Q	H	Y	Z	Z	V	E
Z	F	F	K	D	X	D	O	I	B	K	P	H	F	M	M	V

Can you find these words?

COMPRESSION
FLEXIBLE
BURRS
PRECAUTION
SIPHON
REAM
NEOPRENE
POROUS
FLARE

ACROSS/DOWN/DIAGONAL

FUEL LINES & HOSES

ANSWER KEY

```
. . . . . . . . . . . . . . . . N
. . . . . . . . . . . . . . . O .
. . . . . . . . . . . . . . I . .
. . . . . . . . . . . . . S . . .
. . . . . . . . . . . . S S . . .
. . . . . . . . . F L E X I B L E
. . . . P . . B U R R S . P . . .
. . . . . O . . . P . . . H . . .
. . . . . . R . M . . . . O . . .
. . . . . N E O P R E N E N . . .
. . . P R E C A U T I O N . . . .
. . . . R E . . . S . . . . . . .
. . . A . . A . . . . . . . . . .
. . L . . . . M . . . . . . . . .
. F . . . . . . . . . . . . . . .
```

FUEL LINES & HOSES I

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	2	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	3					4	XX XX	XX XX	XX XX	5	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	6											XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

3. a tube that lets liquid run from one level to a lower one
6. something being pressed into a smaller space

DOWN:

2. rough edges on metal after it has been cut
4. a rubber that is resistant to chemicals
5. something that can bend easily and not break
7. having holes that let liquid or gas pass through

FUEL LINES & HOSES I

ANSWER KEY

ACROSS:

3. SIPHON
6. COMPRESSION

DOWN:

2. BURRS
4. NEOPRENE
5. FLEXIBLE
7. POROUS

```
                      B

                      U

S I P H O N       F   R

          E       L   R

        C O M P R E S S I O N

          P   O   X

          R   R   I

          E   O   B

          N   U   L

          E   S   E
```

FUEL LINES & HOSES II

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	2				XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	4										XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	5					XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. to make a hole bigger by using a tool with cutting edges
4. taking care before you act so that nothing wrong happens
5. rough edges on metal after it has been cut

DOWN:

1. to curve outward
4. having holes that let liquid or gas pass through

AM-10-18

FUEL LINES & HOSES II

ACROSS:	DOWN:
2. REAM	1. FLARE
4. PRECAUTION	4. POROUS
5. BURRS	

```
        F

        L

    R E A M

        R

    P R E C A U T I O N

    O

B U R R S

    O

    U

    S
```

LEARNING WORDS USED IN REPLACING A FUEL PUMP

INTRODUCTION

An important job of the auto mechanic is keeping an engine performing to the manufacturer's specifications. One major contributor to engine performance is a well functioning fuel system. The fuel pump is an important part of this fuel system. In this unit you will learn the technical vocabulary related to the fuel pump.

PERFORMANCE OBJECTIVES

You will match 11 words used in replacing a fuel pump with their definitions. Your teacher will provide a list of words and definitions. You should match at least 8 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

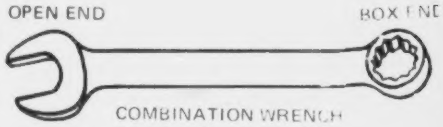
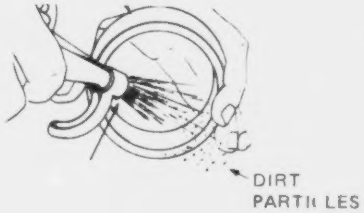
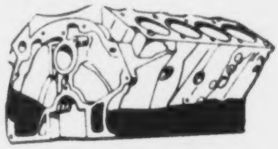
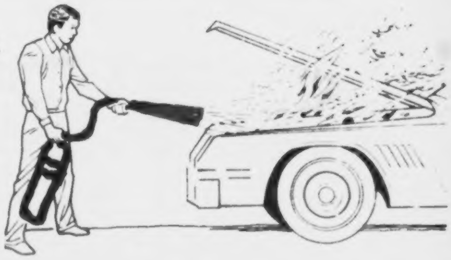
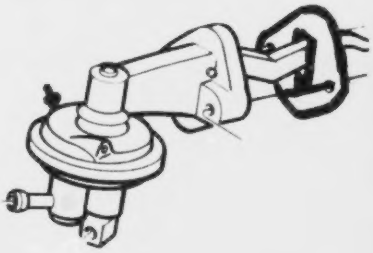
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

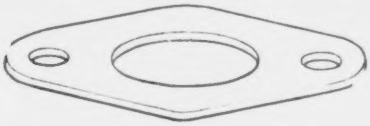
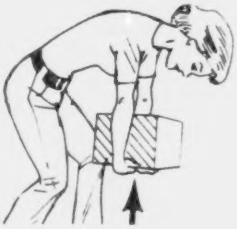
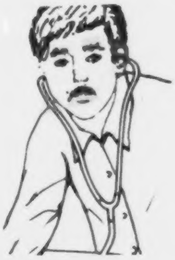
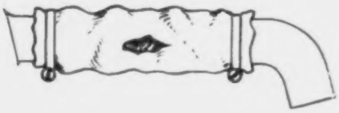
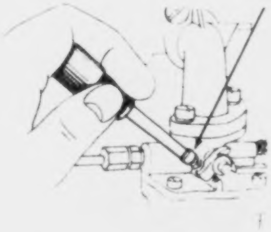
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

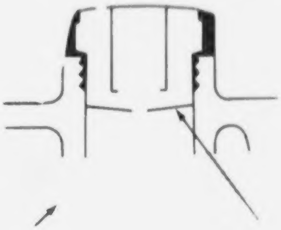
REPLACING FUEL PUMP

combination (com bi na tion)	one thing joined with others for a common purpose	 OPEN END BOX EN COMBINATION WRENCH
contamination (con tam i na tion)	foreign material on or in something	 DIRT PARTICLES
crankcase (crank case)	part of the engine block that holds the crankshaft	
fire (fire) extinguisher (ex tin guish er)	a device that has a chemical inside that puts out fires	
fuel pump (fuel pump)	a device that pumps fuel from the gas tank to the carburetor (car bu re tor)	

REPLACING FUEL PUMP

gasket (gas ket)	something put between two parts to make a seal	
gravity (grav i ty)	the pull of the earth on objects	
mechanic's (me chan ic's) stethoscope (steth o scope)	a tool used to amplify sounds	
rupture (rup ture)	to break open	
serviceable (serv ice a ble)	something that may be repaired and used again	

REPLACING FUEL PUMP

vapor (va por)	a gas form of a liquid	

FUEL PUMP

C O N T A M I N A T I O N G A S K E T Q N

C R A N K C A S E V A P O R N T B H E G L

O S X L H E J P Q W D E S F S L E N K T S

N X O E L G R A V I T Y B M E N V T Q V P

Q O T Z A O S B E I G A H V N A G E P K T

H B I E R E V Q V J I Y O H B H G Q X K Q

S X H C B R M O A C I S O I O H U A I U V

S E R V I C E A B L E Z M L E V E I Z T P

O E M P D V P S C H M W Q H M D V I J E X

C T X M Z F C T A Y B E O U Q F S W H V W

A R L X G Q O J K M S O V G U I B K J X Q

W J U C V U P I U A T U W T V N T A C C Z

N O X K T S Q U N C L P G R F A K W C N O

O C K S E B A O M H R U P T U R E A O G E

C Z V G U I V H R Y U O C O O U D G X K T

S I E Z X F E Y B C W W P I J Y K V J Y C

A O Q A Y O K F Q J L Z Q H T J U T G N B

P M Y L X M S D M I V X P D U Q Q N C A X

U K C O M B I N A T I O N F U E L P U M P

Can you find these words?

CONTAMINATION
CRANKCASE
GRAVITY
SERVICEABLE
FUEL PUMP
GASKET
COMBINATION
RUPTURE
VAPOR

ACROSS

FUEL PUMP

ANSWER KEY

```
CONTAMINATIONGASKET..
CRANKCASEVAPOR.......
.....................
.....GRAVITY.........
.....................
.....................
.....................
SERVICEABLE..........
.....................
.....................
.....................
.....................
.....................
..........RUPTURE....
.....................
.....................
.....................
.....................
..COMBINATIONFUELPUMP
```

FUEL PUMP

N H W R H H M K R S L C P B
Y W I M U B K E U L N Y U G
F H Q F Z P C H P V R T S H
D G K J A C O K T A M R C D
N G H F A F M N U C B D Z L
F U M U A P B W R R A Z J G
A Q S E R V I C E A B L E H
G G W L A F N O K N H G B G
S X C P A L A N V K M D E M
T Z Y U A V T T A C O L Q D
J V V M A L I A G A S K E T
I A J P A C O M N S H B H N
G P J M C X N I M E Z B A K
R O X L P G Z N Z M Y T Z Y
A R A C O A R A P M Q G U J
V I X O A C I T P D H S X M
I F C Y B S H I V T I U N Q
T S A O J R N O G G E C W R
Y B S W O V S N Z G P A T M

Can you find these words?

CONTAMINATION
CRANKCASE
GRAVITY
SERVICEABLE
FUEL PUMP
GASKET
COMBINATION
RUPTURE
VAPOR

ACROSS/DOWN

FUEL PUMP

ANSWER KEY

. . . . R . . . . .

. . . . U . . . . .

. . . . . . C . P . . . . .

. . . . . . O . T . . . . .

. . . F . . M . U C . . . .

. . . U . . B . R R . . . .

. . S E R V I C E A B L E .

. . . L . . N O . N . . . .

. . . P . . A N . K . . . .

. . . U . . T T . C . . . .

. V . M . . I A G A S K E T

. A . P . . O M . S . . . .

G P . . . . N I . E . . . .

R O . . . . . N . . . . . .

A R . . . . . A . . . . . .

V . . . . . . T . . . . . .

I . . . . . . I . . . . . .

T . . . . . . O . . . . . .

Y . . . . . . N . . . . . .

FUEL PUMP

```
S O R U Y R V U P N A H I Y E P R C S N
R O M Y A D F Z N R P J U E Y L U Q O N
G A U N Q Z G U N V T K Y C H X P I N A
C W I G G A S K E T S G R A V I T Y D R
D A S R K Y B H W L L O F X H A U M Z R
F O C C F B T L R B P X L Y N R R E H P
Z O R J A F R I M X L U C I A C E G D M
O A A R Z P A X C B T H M R Z A G N M H
P A N S Z R R J Q H Z A K P J R T K I O
L H K W I C N O W B T A O I Y Q I W J Y
S H C G F G A T P N G G H R P Z Q U Q U
T F A A S C Y C O M B I N A T I O N U Y
P B S E R V I C E A B L E O U J R B T N
I A E O Y B D F N D K Y O J W V Z R K Z
I X P Q B G I Y C L R A C X Z I A X K X
F A B O X V S Y O H O E T V Y Q V Z N B
V V O M A I F T W O J Z Z M G B X K X Z
G A U W Y K B L A P Z T B P B O M I J M
J W S V V T C O Z X S H B M W Y U Z X X
```

Can you find these words?

CONTAMINATION
CRANKCASE
GRAVITY
SERVICEABLE
FUEL PUMP
GASKET
COMBINATION
RUPTURE
VAPOR

ACROSS/DOWN/DIAGONAL

FUEL PUMP

ANSWER KEY

```
. . . . . . . . . . . . . . . . R . . N
. . . . . . F . . . . . . . . . U . O .
. . . . . . . U . . . . . . . . P I . .
. . . . G A S K E T . G R A V I T Y . .
. . . . . . . . . L . . . . . A U . . .
. . C . . . . . . . P . . . N . R . . .
. . R . . . . . . . . U . I . . E . . .
. . A . . . . . . . . . M . . . . . . .
. . N . . . . . . . . A . P . . . . . .
. . K . . . . . . . T . . . . . . . . .
. . C . . . . . . N . . . . . . . . . .
. . A . . . . C O M B I N A T I O N . .
. . S E R V I C E A B L E . . . . . . .
. . E O . . . . . . . . . . . . . . . .
. . P . . . . . . . . . . . . . . . . .
. A . . . . . . . . . . . . . . . . . .
V . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . .
```

FUEL PUMP I

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	3											XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	4	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	6						XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	7					XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

3. one thing joined with another
6. something put between two parts to make a seal
7. a gas form of a liquid

DOWN:

1. a unit that holds the crankshaft
3. dirt on or in something
4. a device that pumps fuel from the gas tank to the carburetor (2 words)

FUEL PUMP I

ANSWER KEY

ACROSS:

3. COMBINATION
6. GASKET
7. VAPOR

DOWN:

1. CRANKCASE
3. CONTAMINATION
4. FUELPUMP

```
                  C
                  R
                  A
        C O M B I N A T I O N
        O         K
        N         C
F       T         A
U       A         S
E       M         E
L       I
P       N
U     G A S K E T
M       T
P       I
  V A P O R
        N
```

FUEL PUMP II

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	1							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	3											XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	4							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

1. the pull of objects toward the earth
3. something that can be repaired and used again
4. to break open

AM-11-20

FUEL PUMP II

ANSWER KEY

ACROSS:

1. GRAVITY
3. SERVICEABLE
4. RUPTURE

GRAVITY

SERVICEABLE

RUPTURE

LEARNING WORDS USED IN INSTALLING CARBURETORS

INTRODUCTION

It is extremely important to keep carburetor parts and circuits as clean as possible. Bits of dirt and dust that are allowed to get into the carburetor will probably cause carburetor and engine trouble sooner or later. Other malfunctions and conditions also make it necessary to remove the carburetor. Many shops, garages or service areas often prefer to remove the old carburetor and install a new one when the old carburetor is diagnosed as defective. In this unit you will learn the technical vocabulary related to installing carburetors.

PERFORMANCE OBJECTIVES

You will match 3 words used in installing carburetors with their definitions. Your teacher will provide a list of words and definitions. You should match all of the words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

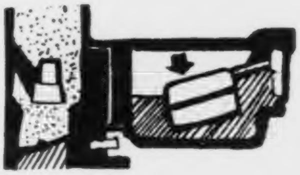
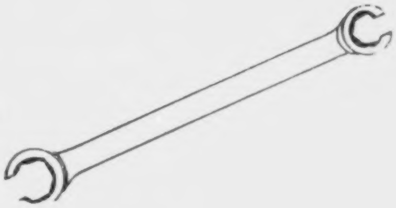
10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

INSTALLING CARBURETORS

carburetor (car bu re tor) floatbowl (float bowl)	the part of the carburetor that holds fuel with a floating device that controls fuel level	
flare-nut wrench (flare-nut wrench)	a tool to use with the nut that holds joints on things	
throttle (throt tle)	a device in the carburetor (car bu re tor) that lets a driver change the speed of the engine	

INSTALLING CARBURETORS

Word Find Puzzles for Units AM-12, AM-13, AM-14, and AM-15 have been combined into one group of puzzles and may be found on Pages AM-15-4 to AM-15-6.

There is no Crossword Puzzle for Unit 12.

LEARNING WORDS USED IN CHECKING THE COOLING SYSTEM

INTRODUCTION

Most auto engines in use today have a liquid cooling system. The cooling system must maintain a normal engine operating temperature while the vehicle is carrying a heavy load and/or when the temperature around the cylinder walls change. Outside temperatures may range from a minus 30 degrees Fahrenheit (-30° F.) to 500 degrees Fahrenheit (500° F.) next to the cylinder walls at the moment of combustion. One-third of the heat of combustion is dissipated by the cooling system, one-third is expelled out the exhaust system, and the remaining one-third is used to propel the vehicle. All components of the cooling system must function properly to prevent damage or premature wear on the engine. In this unit you will learn the technical vocabulary related to the cooling system.

PERFORMANCE OBJECTIVES

You will match 15 words used in checking cooling systems with their definitions. Your teacher will provide a list of words and definitions. You should match at least 12 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.

2. COVER **only** the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER all rows of words, definitions, and pictures except **one**. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

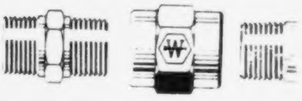
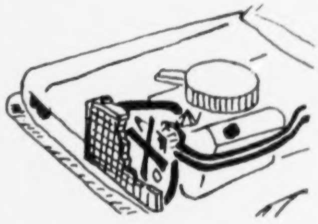
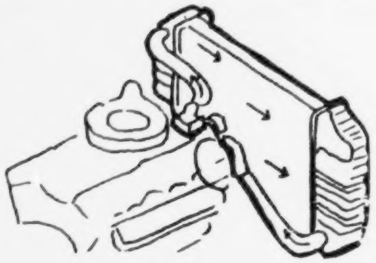
13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

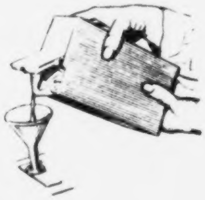
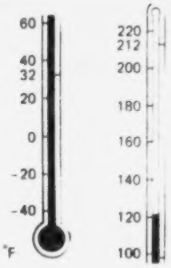
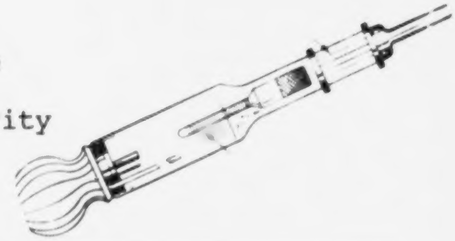
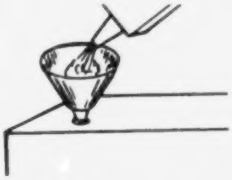
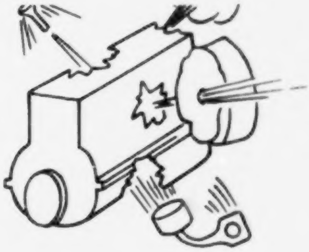
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

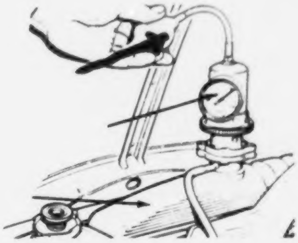
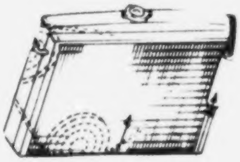
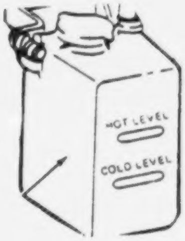
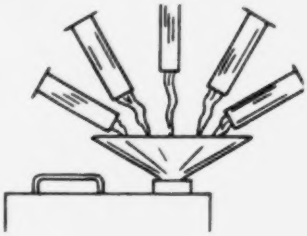
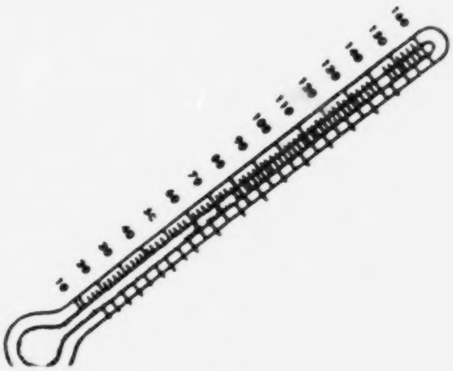
CHECKING COOLING SYSTEM

adapter (a dapt er)	a part or fitting used to join two parts so that these parts fit together	
antifreeze (an ti freeze)	a chemical that lowers the freezing temperature of water	ANTIFREEZE 1 GAL
cooling system (cool ing sys tem)	the parts that keep the engine at the right temperature	
cross flow (cross flow)	the liquid flows into the radiator (ra di a tor) and across to the other side and then out	
dissipate (dis si pate)	to break up and scatter	

CHECKING COOLING SYSTEM

ethylene glycol (eth yl ene glycol)	a chemical (chem i cal) used as an antifreeze	
Fahrenheit (Fahr en heit)	a scale to measure temperature with freezing at 32° and boiling at 212°	 60 40 32 20 0 -20 -40 °F 220 212 200 180 160 140 120 100
hydrometer (hy drom e ter)	a tool used to measure the specific (spe cif ic) gravity (grav i ty) of liquid	
methanol (meth a nol)	alcohol used as an antifreeze that can catch on fire	
premature (pre ma ture)	something that happens before it is supposed to	

CHECKING COOLING SYSTEM

pressurized (pres sur ized)	something that is under pressure	
radiator (ra di a tor)	a unit that removes the heat of an engine by flowing air through it	
reservoir (res er voir)	a container that holds a supply of liquid	
solution (so lu tion)	a combination of two or more liquids	
thermometer (ther mom e ter)	an instrument used to measure temperature	

CHECKING COOLING SYSTEM

Word Find Puzzles for Units AM-12, AM-13, AM-14, and AM-15 have been combined into one group of puzzles and may be found on Pages AM-15-4 to AM-15-6.

COOLING SYSTEM I

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	2				3						XX XX		XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	4	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	5									
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX
XX XX	XX XX	XX XX	6									XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	7	XX XX	XX XX		XX XX	XX XX	8	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX		XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX		XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX		XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	10								XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. a liquid that lowers the freezing temperature
5. a tool used to measure the specific gravity of liquid
6. to break up and scatter
10. a unit that lowers the temperature of an engine with flowing air

DOWN:

1. a device used to join two parts so that the unit works well
3. the measure of temperature with freezing at 32
4. the liquid flows into the radiator and across to the other side and then out (2 words)
7. an antifreeze that can catch on fire
8. a liquid made of two or more things

AM-13-12

COOLING SYSTEM I

ANSWER KEY

ACROSS:

2. ANTIFREEZE
5. HYDROMETER
6. DISSIPATE
10. RADIATOR

DOWN:

1. ADAPTER
3. FAHRENHEIT
4. CROSSFLOW
7. METHANOL
8. SOLUTION

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                                A
                                D
          A N T I F R E E Z E   A
      C           A             P
      R           H Y D R O M E T E R
      O           R             E
  D I S S I P A T E             R
      S           N
M     F     S     H
E     L     O     E
T     O     L     I
H     W     U     T
A           T
N     R A D I A T O R
O           O
L           N
```

COOLING SYSTEM II

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	2	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	4											XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	5									XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	6														XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

4. something that is under pressure
5. a unit that holds liquid
6. a chemical used as an antifreeze (2 words)

DOWN:

1. something that happens before it is suppose to
2. the parts that keep the engine at the right temperature (2 words)

COOLING SYSTEM II

ACROSS:		DOWN:	
4.	PRESSURIZED	1.	PREMATURE
5.	RESERVOIR	2.	COOLINGSYSTEM
6.	ETHYLENEGLYCOL		

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                  P
      C           R
      O           E
      O           M
      L           A
      I           T
      N           U
      G           R
P R E S S U R I Z E D
      Y
  R E S E R V O I R
      T
      E T H Y L E N E G L Y C O L
      M
```

LEARNING WORDS USED IN REPLACING HOSES, THERMOSTATS, AND CORE PLUGS

INTRODUCTION

The most common method of cooling automobile engines is the liquid cooling method. A liquid is forced through special passages inside the engine. The liquid passes through a series of hoses and a radiator where the heat is transferred to the atmosphere. As a mechanic, you must be able to service or replace the various parts of the cooling system to keep the engine performing properly. In this unit you will learn the technical vocabulary related to hoses, thermostats, and core plugs.

PERFORMANCE OBJECTIVES

You will match 3 words used in replacing hoses, thermostats, and core plugs with their definitions. Your teacher will provide a list of words and definitions. You should match all of the words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.

2. COVER **only** the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

CROSSWORD

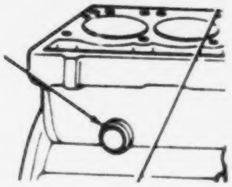
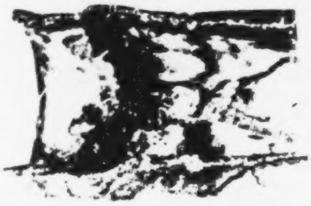
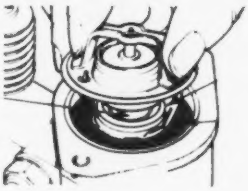
1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

REPLACING HOSES, THERMOSTATS, AND CORE PLUGS

core plug (core plug)	a round metal plug in head and block castings sometimes called a freeze-out plug	
deterioration (de te ri o ra tion)	something becoming worse or lower in quality (qual i ty)	
thermostat (ther mo stat)	a device that controls temperature	

REPLACING HOSES, THERMOSTATS, AND CORE PLUGS

Word Find Puzzles for Units AM-12, AM-13, AM-14, and AM-15 have been combined into one group of puzzles and may be found on Pages AM-15-4 to AM-15-6.

HOSES AND CORE PLUGS

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	2								XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	4													XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. a round metal plug that will blow out if the thermostat overheats (2 words)
4. something becoming worse or lower in quality

AM-14-10

HOSES AND CORE PLUGS

ANSWER KEY

ACROSS:

2. COREPLUG
4. DETERIORATION

COREPLUG

DETERIORATION

LEARNING WORDS USED IN REPLACING COOLING SYSTEM COMPONENTS

INTRODUCTION

The most common method of cooling internal combustion engines is the liquid cooling method. A liquid is forced through special passages inside the engine and passed through a series of hoses and a radiator, where the heat is transferred to the atmosphere. In this unit you will learn the technical vocabulary related to cooling system components.

PERFORMANCE OBJECTIVES

You will match 7 words used in replacing cooling system components with their definitions. Your teacher will provide a list of words and definitions. You should match at least 6 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definitoin as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

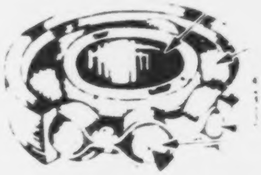
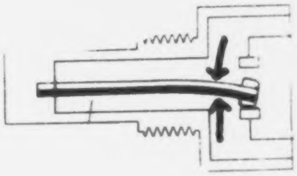
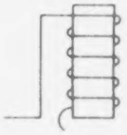
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

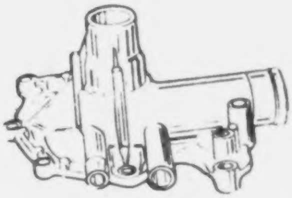
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

REPLACING COOLING SYSTEM COMPONENTS

ball bearing (ball bear ing)	a metal unit with steel balls inside used to lower friction (fric tion)	
bimetallic (bi me tall ic)	made of two metals that sense different conditions	
fan clutch unit (fan cluth u nit)	a unit that is run by a temperature sensitive fluid and fastened to the water pump and fan blades	
operational (op er a tion al)	in working condition	
spiral (spi ral)	winding around a center from the bottom to the top	

REPLACING COOLING SYSTEM COMPONENTS

variation (var i a tion)	change	
water pump (wa ter pump)	a device used to move a liquid through the cooling system (sys tem)	

COOLING SYSTEM

E T H Y L E N E G L Y C O L S P S N Z I X

B A L L B E A R I N G D I S S I P A T E E

P R E S S U R I Z E D A L J J V C K Q H W

O P E R A T I O N A L U J K P S K C D S S

I E O J U H R E S E R V O I R A L I B L E

A D A P T E R O X Z T O W R S J M X L J K

P R E M A T U R E I Q H Y D R O M E T E R

M E T H A N O L H N O V C O A R M W H E P

U D E T E R I O R A T I O N S P I R A L I

N J W E C O O L I N G S Y S T E M V X E A

B I M E T A L L I C W A T E R P U M P U Q

T H R O T T L E F A H R E N H E I T M I O

C R O S S F L O W S O L U T I O N Y J C P

O S C O E K J I P P J Y K Y D D M T G V T

D E Q Z A K R E G V A R I A T I O N V S Z

A M B P E B U V C O R E P L U G Y B H G C

A N T I F R E E Z E J R A D I A T O R A A

Can you find these words?

ETHYLENE GLYCOL
OPERATIONAL
BIMETALLIC
ANTIFREEZE
RESERVOIR
CROSS FLOW
THROTTLE
METHANOL

DETERIORATION
BALL BEARING
HYDROMETER
WATER PUMP
PREMATURE
SOLUTION
RADIATOR
SPIRAL

COOLING SYSTEM
PRESSURIZED
FAHRENHEIT
VARIATION
DISSIPATE
CORE PLUG
ADAPTER

ACROSS

COOLING SYSTEM

ANSWER KEY

```
E T H Y L E N E G L Y C O L . . . . . . .
B A L L B E A R I N G D I S S I P A T E .
P R E S S U R I Z E D . . . . . . . . . .
O P E R A T I O N A L . . . . . . . . . .
. . . . . . R E S E R V O I R . . . . . .
A D A P T E R . . . . . . . . . . . . . .
P R E M A T U R E . . H Y D R O M E T E R
M E T H A N O L . . . . . . . . . . . . .
. D E T E R I O R A T I O N S P I R A L .
. . . . C O O L I N G S Y S T E M . . . .
B I M E T A L L I C W A T E R P U M P . .
T H R O T T L E F A H R E N H E I T . . .
C R O S S F L O W S O L U T I O N . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . V A R I A T I O N . . .
. . . . . . . . C O R E P L U G . . . . .
A N T I F R E E Z E . R A D I A T O R . .
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COOLING SYSTEM

G Q G W W W U U I B P Z X K X T M I C M Y

R G C F D C L G Q D J C C A O R O C O E V

A F Q I A V D P Y H Q O O A P A I S N T F

X G L F S P I R A L R B O R E D P H U H D

X L L C R O S S F L O W L I T I C A L A D

R X B J Z G S D E T E R I O R A T I O N U

T W B V A R I A T I O N N Y V T C T O O F

X A A W P H P D H P Q P G V G O B A P L A

X T L J R R A T Y P R E S S U R I Z E D H

R E L R E A T T L Z A H Y D R O M E T E R

S R B B M E E R E G O L S O B D E X G A E

O P E R A T I O N A L A T O D P T A S D N

L U A N T I F R E E Z E E M Y X A B W A H

U M R C U V H R G B W U M P B R L H P P E

T P I I R Y L I L Z N C O R E P L U G T I

I N N B E E C Q Y R E S E R V O I R U E T

O R G J B H B E C F V W X O O X C P B R R

N U V Q K F S A O R A G O A A M J T S S Z

R G T H R O T T L E A O B M H S Q U H W L

Can you find these words?

ETHYLENE GLYCOL
OPERATIONAL
BIMETALLIC
ANTIFREEZE
RESERVOIR
CROSS FLOW
THROTTLE
METHANOL

DETERIORATION
BALL BEARING
HYDROMETER
WATER PUMP
PREMATURE
SOLUTION
RADIATOR
SPIRAL

COOLING SYSTEM
PRESSURIZED
FAHRENHEIT
VARIATION
DISSIPATE
CORE PLUG
ADAPTER

ACROSS/DOWN

COOLING SYSTEM

ANSWER KEY

```
. . . . . . . . . . . . . . . . . . . M .
. . . . . . . . . . . . C . . R . . . E .
. . . . . . D . . . . . O . . A . . . T .
. . . . S P I R A L . . O . . D . . . H .
. . . C R O S S F L O W L . . I . . . A .
. . . . . . S D E T E R I O R A T I O N .
. W B V A R I A T I O N N . . T . . . O F
. A A . P . P . H . . . G . . O B . . L A
. T L . R . A . Y P R E S S U R I Z E D H
. E L . E . T . L . . H Y D R O M E T E R
S R B . M . E . E . . . S . . . E . . A E
O P E R A T I O N A L . T . . . T . . D N
L U A N T I F R E E Z E E . . . A . . A H
U M R . U . . . G . . . M . . . L . . P E
T P I . R . . . L . . C O R E P L U G T I
I . N . E . . . Y R E S E R V O I R . E T
O . G . . . . . C . . . . . . . C . . R .
N . . . . . . . O . . . . . . . . . . . .
. . T H R O T T L E . . . . . . . . . . .
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COOLING SYSTEM

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Z E Y Q P L B X A O A M O W G A W C P R N
D A F U D I S S I P A T E Q S X H R L Y Z
U A Z Y B A L L B E A R I N G O C O C R G
M A W R O C F A H R E N H E I T C S H N B
N E A E A O T A P A O S B J W Y R S T F N
J A T N O O K H Z T P C I Y L D A F T I B
T N E H T L W N R I F R M G W I D L M E V
U V R O A I X A Q O O P E N C G I O T P L
P P P P O N F X U N T N T S L J A W L D X
R E U R O G O R H A E T A X S S T V K E O
P U M E I S O L E L U U L L N U O A A T N
C E P M L Y D B Y E A V L E L A R R B C H
S O S A U S S H O R Z Z I Y W Q E I C O E
S P J T J T T W P A Y E C D V S Y A Z R R
V D I U D E T E R I O R A T I O N T O E U
H Y D R O M E T E R R E S E R V O I R P D
X O M E A G Y O I B J S O L U T I O N L O
A K B R J L I G Z R Y P B F G S O N Z U C
T R W D P H A D A P T E R T N L W L X G T
```

Can you find these words?

ETHYLENE GLYCOL
OPERATIONAL
BIMETALLIC
ANTIFREEZE
RESERVOIR
CROSS FLOW
THROTTLE
METHANOL

DETERIORATION
BALL BEARING
HYDROMETER
WATER PUMP
PREMATURE
SOLUTION
RADIATOR
SPIRAL

COOLING SYSTEM
PRESSURIZED
FAHRENHEIT
VARIATION
DISSIPATE
CORE PLUB
ADAPTER

ACROSS/DOWN/DIAGONAL

COOLING SYSTEM

ANSWER KEY

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. . . . . . . . . O . . . . . . . C . . .
. . . . D I S S I P A T E . . . . R L . .
. . . . B A L L B E A R I N G . . O . . .
M . W . . C F A H R E N H E I T C S . . .
. E A . . O T . . A . . B . . Y R S . . .
. . T N . O . H . T P . I . L . A F . . .
. . E H T L . . R I . R M G . . D L . . .
. . R . A I . . . O . . E . . . I O . . .
. . P P . N F . . N T N T S . . A W . . .
. . U R . G O R . A E T A . S . T V . . .
. . M E . S . L E L . . L . . U O A . . .
. . P M . Y . . Y E . . L E . . R R . C .
S . . A . S . H . . Z . I . . . . I . O .
. P . T . T T . . . . E C . . . . A Z R .
. . I U D E T E R I O R A T I O N T . E .
H Y D R O M E T E R R E S E R V O I R P D
. . . E A . . . . . . S O L U T I O N L .
. . . . . L . . . . . . . . . . . N . U .
. . . . . . A D A P T E R . . . . . . G .
```

COOLING SYSTEM COMPONENTS

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	2	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	3	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	4										XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX
XX XX	XX XX	XX XX	5													XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	6									XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

4. made of two metals
5. a unit that is run by fluid and fastened to the water pump (3 words)
6. a device used to move a liquid through the cooling system (2 words)

DOWN:

1. winding around a center from the bottom to the top
2. change
3. in working condition
4. a metal unit with steel balls inside to lower friction (2 words)

COOLING SYSTEM COMPONENTS

ANSWER KEY

ACROSS:		DOWN:	
4.	BIMETALLIC	1.	SPIRAL
5.	FANCLUTCHUNIT	2.	VARIATION
6.	WATERPUMP	3.	OPERATIONAL
		4.	BALLBEARING

```
                    S
                    P
                    I   V
  O                 R   A
  P                 A   R
  E     B I M E T A L L I C
  R     A               A
F A N C L U T C H U N I T
  T     L               I
  I     B               O
  O     E               N
  N     A
W A T E R P U M P
  L     I
        N
        G
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LEARNING WORDS USED IN INSPECTING AND REPLACING EXHAUST COMPONENTS

INTRODUCTION

The purpose of the exhaust system is three-fold. First it must carry the exhaust gases from the engine underneath the car to the rear of the passenger companrtment. The second job is to prevent carbon monoxide from entering the passenger compartment. The final job is to silence the combustion and exhaust noise from the engine. The exhaust system consists of the exhaust manifold(s), exhaust pipe, muffler, tailpipe, clamps, and hangers. In this unit you will learn the technical vocabulary related to the components of the exhaust system.

PERFORMANCE OBJECTIVES

You will match 17 words used in inspecting and replacing exhaust components with their definitions. Your teacher will provide a list of words and definitions. You should match at least 14 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.

2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definitoin as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

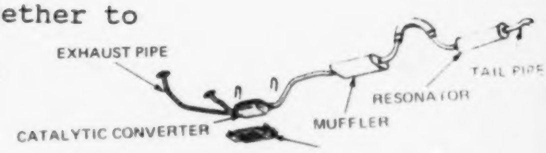
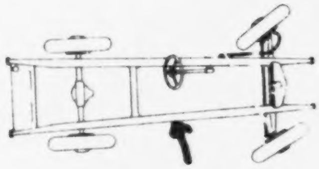
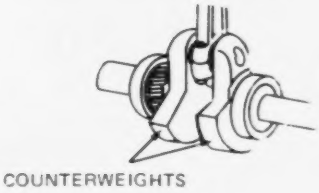
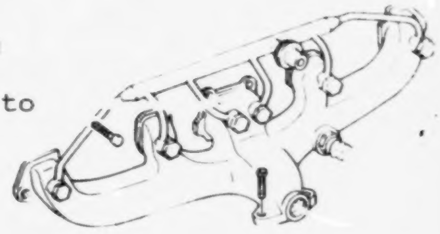
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

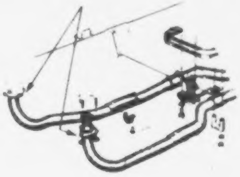
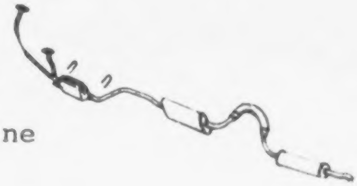
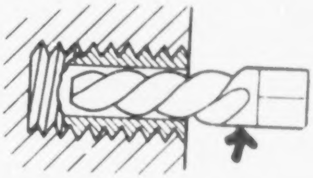
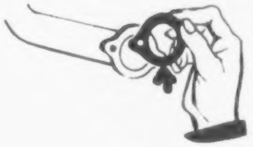
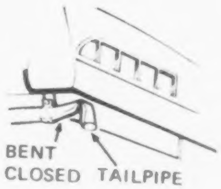
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

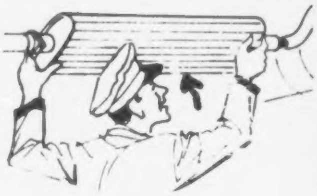
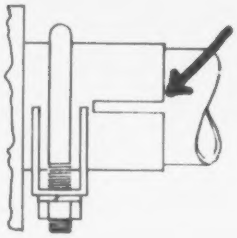
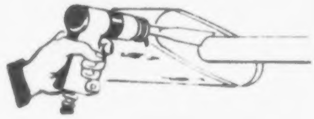
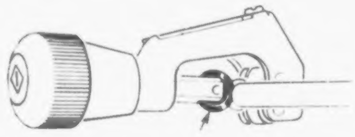
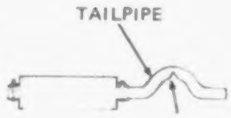
INSPECTING AND REPLACING EXHAUST COMPONENT

assemblies (as sem blies)	the parts put together to make a whole unit	 EXHAUST PIPE TAIL PIPE RESONATOR MUFFLER CATALYTIC CONVERTER
carbon monoxide (car bon mon ox ide)	a gas from incomplete combustion that is poisonous and has no color or odor	
chassis (chas sis)	the frame of a car that the body and other parts fasten to	
counterweight (coun ter weight)	a weight added to a part so that the part will be balanced	 COUNTERWEIGHTS
exhaust manifold (ex haust man i fold)	pipes that carry waste vapor from the engine to the exhaust pipes	

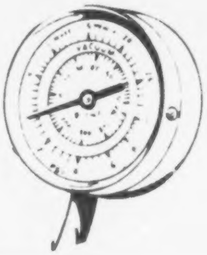
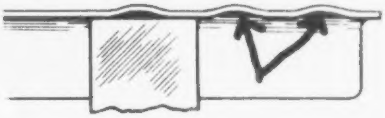
INSPECTING AND REPLACING EXHAUST COMPONENTS

exhaust pipe (ex haust pipe)	the pipe that carries waste vapor from the exhaust manifold to the muffler	
exhaust system (ex haust sys tem)	all the parts that carry waste vapor from the engine	
extractor (ex trac tor)	the tool that is used to take out a broken bolt	
flange (flange)	a mating surface for bolting parts together	
inoperative (in op er a tive)	not working	

INSPECTING AND REPLACING EXHAUST COMPONENTS

muffler (muf fler)	a unit used to quieten the sound of exhaust gases from an engine that is running	
penetrate (pen e trate)	to go through something	
pneumatic (pneu mat ic)	operated by compressed air	
sever (sev er)	cut or separate	
tail pipe (tail pipe)	the pipe that carries waste vapor from the muffler to the atmosphere	

INSPECTING AND REPLACING EXHAUST COMPONENTS

vacuum gauge (vac u um gauge)	a tool used to measure the vacuum in an area	
warped (warped)	twisted in form because of heat	

EXHAUST COMPONENTS

E X H A U S T M A N I F O L D U B R R H D

C O U N T E R W E I G H T M U F F L E R Y

I N O P E R A T I V E P E N E T R A T E H

E X T R A C T O R S E V E R J A S W R L Y

T A I L P I P E Q B D X Y X F D D E B M X

C A R B O N M O N O X I D E T A C L Q B K

O S L S T R R E X H A U S T S Y S T E M X

V P J O D Y Y X Q F W O O X U J B N V X X

K K B M P B Q K O M V L K T A H G X G S E

A S S E M B L I E S K E J D N G N W E W Z

V A C U U M G A U G E W B E W G Q R J G V

K F A N M Q J P N E U M A T I C M Q F Y L

R A Q X E O S X L S E P G G N L M C D U C

Y L S F P A B Z R C H A S S I S S E J P D

O D W A R P E D Y T U D O M S A N Y O R O

A H O V S K F C S D E X H A U S T P I P E

N C S V N Z B A A L W X J W F L A N G E X

Can you find these words?

EXHAUST MANIFOLD
COUNTERWEIGHT
EXHAUST PIPE
PENETRATE
MUFFLER
FLANGE
CARBON MONOXIDE
VACUUM GAUGE
ASSEMBLIES
EXTRACTOR
CHASSIS
SEVER
EXHAUST SYSTEM
INOPERATIVE
PNEUMATIC
TAIL PIPE
WARPED

ACROSS

EXHAUST COMPONENTS

ANSWER KEY

```
E X H A U S T M A N I F O L D . . . . . .
C O U N T E R W E I G H T M U F F L E R .
I N O P E R A T I V E P E N E T R A T E .
E X T R A C T O R S E V E R . . . . . . .
T A I L P I P E . . . . . . . . . . . . .
C A R B O N M O N O X I D E . . . . . . .
. . . . . . . E X H A U S T S Y S T E M .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
A S S E M B L I E S . . . . . . . . . . .
V A C U U M G A U G E . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . P N E U M A T I C . . . . .
. . . . . . . . . C H A S S I S . . . . .
. . W A R P E D . . . . . . . . . . . . .
. . . . . . . . . . E X H A U S T P I P E
. . . . . . . . . . . . . . F L A N G E .
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EXHAUST COMPONENTS

L	T	E	N	B	V	B	V	Q	E	J	X	J	L	Q	C	E	N	P	Z	P
C	A	R	B	O	N	M	O	N	O	X	I	D	E	F	D	A	N	N	M	W
O	I	H	U	F	I	S	T	F	X	V	X	G	X	K	P	V	A	E	U	D
U	L	O	C	Q	Q	V	S	Q	Q	P	E	F	H	T	N	B	A	U	F	N
N	P	T	M	D	I	V	A	C	U	U	M	G	A	U	G	E	O	M	F	B
T	I	F	G	W	I	W	H	B	W	X	A	H	U	Q	A	T	A	A	L	G
E	P	W	C	L	F	P	Y	E	X	H	A	U	S	T	S	Y	S	T	E	M
R	E	L	T	J	U	I	N	O	P	E	R	A	T	I	V	E	C	I	R	N
W	R	V	B	W	X	O	H	U	Y	H	K	S	M	T	F	X	C	C	X	E
E	X	H	A	U	S	T	P	I	P	E	B	S	A	Q	J	T	H	P	F	H
I	S	J	S	I	Y	S	D	S	J	T	P	E	N	E	T	R	A	T	E	G
G	E	I	F	T	D	P	F	M	B	A	X	M	I	T	B	A	S	L	M	L
H	R	H	X	A	T	N	C	X	X	R	K	B	F	K	Q	C	S	W	I	N
T	Y	O	O	F	V	Y	T	I	K	M	G	L	O	V	F	T	I	G	D	O
H	I	V	R	E	L	O	V	I	I	F	A	I	L	O	L	O	S	S	Z	A
U	F	J	C	V	E	Z	T	K	W	I	S	E	D	W	A	R	P	E	D	A
P	A	A	G	I	X	U	Q	C	A	N	K	S	X	Z	N	J	G	V	N	O
H	X	A	W	E	S	U	A	B	D	G	V	E	P	H	G	V	N	E	X	E
Q	W	S	K	K	Y	G	S	X	J	F	Z	L	X	S	E	K	C	R	W	H

Can you find these words?

EXHAUST MANIFOLD
COUNTERWEIGHT
EXHAUST PIPE
PENETRATE
MUFFLER
FLANGE

CARBON MONOXIDE
VACUUM GAUGE
ASSEMBLIES
EXTRACTOR
CHASSIS
SEVER

EXHAUST SYSTEM
INOPERATIVE
PNEUMATIC
TAIL PIPE
WARPED

ACROSS/DOWN

EXHAUST COMPONENTS

ANSWER KEY

```
. T . . . . . . . . . . . . . . . . P . .
C A R B O N M O N O X I D E . . . . N M .
O I . . . . . . . . . . . X . . . . E U .
U L . . . . . . . . . . . H . . . . U F .
N P . . . . V A C U U M G A U G E . M F .
T I . . . . . . . . . . . U . . . . A L .
E P . . . . . . E X H A U S T S Y S T E M
R E . . . . I N O P E R A T I V E . I R .
W . . . . . . . . . . . S M . . X C C . .
E X H A U S T P I P E . S A . . T H . . .
I . . . . . . . . . . P E N E T R A T E .
G . . . . . . . . . . . M I . . A S . . .
H . . . . . . . . . . . B F . . C S . . .
T . . . . . . . . . . . L O . F T I . . .
. . . . . . . . . . . . I L . L O S S . .
. . . . . . . . . . . . E D W A R P E D .
. . . . . . . . . . . . S . . N . . V . .
. . . . . . . . . . . . . . . G . . E . .
. . . . . . . . . . . . . . . E . . R . .
```

EXHAUST COMPONENTS

B I T G Q W A R P E D Q W C R R B W A J
R Y F R E G T R L N E Y W E B F W S Z M
U H K L Y X X Q I G E O E J E B V E R F
O P A H A O H M U N Q U T M A J M P Z Q
J L H J G N C A R B O N M O N O X I D E
H X W C B B G O U G S P R A I A N J E X
F E E M H M A E U S A V E R T L I P O H
L X V M U A E A F N T D D R V I I C E A
A T J U M F S T P P T S Z H A P C T F U
T R C Q S X F S J A K E Y D T T A X Y S
X A S S E M B L I E S V R S X R I C T T
V C I F D H Z H E S H U U W T E R V M M
K T Q L D F L X X R N A I E E E Y W E A
L O N J P J M Q S A H S N C B I M E O N
W R E B T I H B B X S E V E R P G P O I
U S C S M Y P R E C P J K U M M J H X F
V D U H W U T E O Z U V E F U E K P T O
I T K S K J I I P T N G M B U E Y G R L
H R V I Q I H E P W A G F V R N A S H D

Can you find these words?

EXHAUST MANIFOLD
COUNTERWEIGHT
EXHAUST PIPE
PENETRATE
MUFFLER
FLANGE

CARBON MONOXIDE
VACUUM GAUGE
ASSEMBLIES
EXTRACTOR
CHASSIS
SEVER

EXHAUST SYSTEM
INOPERATIVE
PNEUMATIC
TAIL PIPE
WARPED

ACROSS/DOWN/DIAGONAL

AM-16-18

EXHAUST COMPONENTS

ANSWER KEY

```
. . . . . W A R P E D . . . . . . . . .
. . F . E . . . N E . . . . . . . . . .
. . . L . X . . I G E . . . . . . . . .
. . . . A . H . U N . U . . . . . . . .
. . . . . N C A R B O N M O N O X I D E
. . . C . . G O U . . P . A . . . . E X
. E . M H M . E U S . . E . T . . P . H
. X . . U A . . . N T . . R . I I . E A
. T . U . F S . . . T S . . A P C T . U
T R C . . . F S . . . E Y . T T A . . S
. A S S E M B L I E S . R S . R I . . T
V C I . . . . . E S . . U W T . . V . M
. T . L . . . . . R . A . E E E . . E A
. O . . P . . . . . H . N . . I M . . N
. R . . . I . . . X S E V E R . G . . I
. . . . . . P . E . P . . . . . . H . F
. . . . . . . E . . . . . . . . . . T O
. . . . . . . . . . . . . . . . . . . L
. . . . . . . . . . . . . . . . . . . D
```

EXHAUST COMPONENTS I

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	2											3				XX XX	XX XX	XX XX
XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	4											XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX		XX XX	5	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	6									XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. the pipes that carry waste vapor from the engine (2 words)
4. the pipe that carries waste vapor from the exhaust manifold (2 words)
6. something that is used to take out a part

DOWN:

1. the parts put together to make a whole unit
2. all the parts that carry waste vapor from the engine (2 words)
3. a part that is like an arm that holds something in place
5. the frame of a car that the body sits on

EXHAUST COMPONENTS I

ANSWER KEY

ACROSS:

2. EXHAUSTMANIFOLD
4. EXHAUSTPIPE
6. EXTRACTOR

DOWN:

1. ASSEMBLIES
2. EXHAUST SYSTEM
3. FLANGE
5. CHASSIS

```
A
S   E X H A U S T M A N I F O L D
S   X                 L
E X H A U S T P I P E   A
M   A                 N
B   U                 G
L   S                 E
I   T
E   S
S   Y C
    S H
E X T R A C T O R
    E S
    M S
      I
      S
```

EXHAUST COMPONENTS II

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	2									XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	3									XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	4	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	5														XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	6						XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	7					XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	8							XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. run by air
3. to go through something
5. a gas that is poisonous and has not color or odor (2 words)
6. changed in form because of heat
7. cut or separate
8. a unit used to quietly pass exhaust gases from an engine that is running

DOWN:

1. not working
4. the pipe that carries waste vapor from the muffler (2 words)

EXHAUST COMPONENTS II

ANSWER KEY

ACROSS:

2. PNEUMATIC
3. PENETRATE
5. CARBONMONOXIDE
6. WARPED
7. SEVER
8. MUFFLER

DOWN:

1. INOPERATIVE
4. TAILPIPE

```
    I

  P N E U M A T I C

    O

    P E N E T R A T E

    E                   T

    R                   A

  C A R B O N M O N O X I D E

    T                   L

    I             W A R P E D

S E V E R               I

    E                   P

              M U F F L E R
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LEARNING WORDS USED IN TESTING COMPRESSION

INTRODUCTION

The present day auto mechanic is faced with the increasingly difficult task of analyzing and diagnosing engine performance problems. One test which may be used to diagnose a mechanical malfunction is the cylinder compression test. When properly conducted, this test may be used to determine whether the malfunction is because of a bad valve, bad rings, or a leaking head gasket. This test can be deceptive to the inexperienced mechanic since a cylinder that is pumping oil may produce a higher compression reading than a normal cylinder. Also, the test will not determine which valve--intake or exhaust--is leaking. The test will help to determine whether the engine is in a balanced condition--that is, all cylinders should be within 10 pounds pressure when compared to the average cylinder. In this unit you will learn the technical vocabulary related to testing compression.

PERFORMANCE OBJECTIVES

You will match 11 words used in testing compression with their definitions. Your teacher will provide a list of words and definitions. You should match at least 9 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.

2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definitoin as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

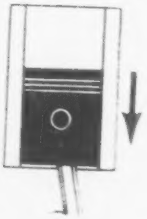
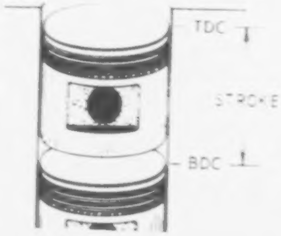
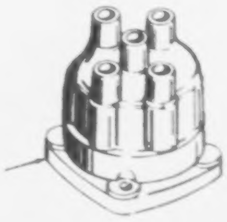
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

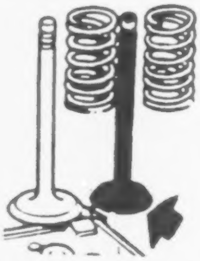
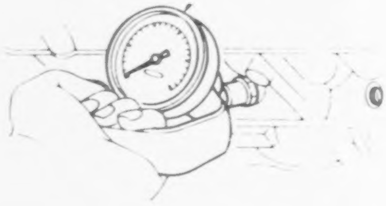
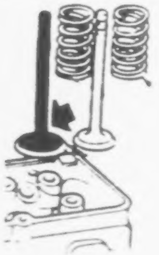
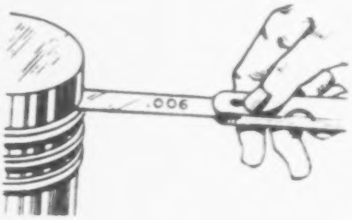
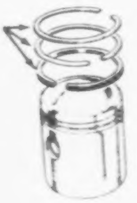
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

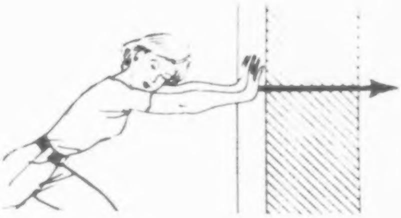
TESTING COMPRESSION

analyzing (an a lyz ing)	studying closely to find the problem	
cylinder (cyl in der)	a round opening in an engine block that the piston moves up and down in	
diagnosing (di ag no sing)	identifying the problem	
displacement (dis place ment)	the space that the piston occupies from the top to the bottom of its travel	
distributor (dis trib u tor) cap (cap)	a covered cap that has a central point for receiving coil voltage and then sends it to the spark plugs	

TESTING COMPRESSION

exhaust valve (ex haust valve)	the part through which burned fuel passes from the cylinder (cyl in der) to the exhaust manifold	
gauge (gauge)	a tool used to measure or test	
intake valve (in take valve)	valve through which fuel mixture enters the cylinder (cyl in der)	
minimum (min i mum)	the least or smallest	
piston rings (pis ton rings)	parts used to seal compression above the piston and oil below the piston	

TESTING COMPRESSION

pressure (pres sure)	the force exerted against something	

TESTING COMPRESSION

D I S T R I B U T O R C A P L S O C P N G

P R E S S U R E G A U G E E K Z J Y U F P

X W R W T X B T M Y D E U B N B A Y L Q L

A N L R R H Z M F H A U D R O R R E O D H

G U Z A M O K J N Q M Q N D Z D M C Z F D

S N U S E R P F D W L Z N N J A H N W N V

G B D F S X V G L P S Z H A C W J D E W M

M I G U D X G G R X I Z R T L D T W K J K

Y F O A N E F I D U N Y Z A R U Z F L E E

E X H A U S T V A L V E L T U A J G Y C M

M B S Q L T X Q G P E B I U G R E S F K W

R I O M I N I M U M X I B D Q W V S D A M

O W I U O U L C J E C M Z V B E X Z I S X

O A P V S I D U P I I W M E H S U F A I E

T Z E U U D H H X Z R X Z F O S L T Q R R

I N T A K E V A L V E H H Y I S Z J F I E

P I S T O N R I N G S H F L R C X V G S V

N D I A G N O S I N G C O G C N X N Z G B

G Y C Q X J C C L A N A L Y Z I N G M M Q

Can you find these words?

DISTRIBUTOR CAP
INTAKE VALVE
ANALYZING
EXHAUST VALVE
DIAGNOSING
PRESSURE
PISTON RINGS
MINIMUM
GAUGE

ACROSS

TESTING COMPRESSION

ANSWER KEY

D I S T R I B U T O R C A P . . . .

P R E S S U R E G A U G E . . . .

. . . .

. . . .

. . . .

. . . .

. . . .

. . . .

. . . .

E X H A U S T V A L V E . . . .

. . . .

. . . M I N I M U M . . . .

. . . .

. . . .

. . . .

I N T A K E V A L V E . . . .

P I S T O N R I N G S . . . .

. D I A G N O S I N G . . . .

. . . . A N A L Y Z I N G . . .

TESTING COMPRESSION

G	E	A	T	L	T	B	H	C	S	L	Y	I	G	B	D	H	G	M
W	E	A	D	Y	S	P	I	Q	Z	S	X	I	S	F	J	Y	K	W
N	A	P	F	O	E	C	K	T	Y	P	K	X	J	T	Z	R	Z	L
K	X	E	X	T	X	U	U	O	F	G	J	C	N	S	Y	Q	G	E
U	J	A	P	Y	H	N	T	Y	A	N	A	L	Y	Z	I	N	G	X
P	W	O	W	D	A	Y	T	U	Y	K	F	X	V	O	N	M	L	L
M	I	N	I	M	U	M	J	I	A	B	J	H	P	M	T	P	P	P
L	Q	T	D	I	S	T	R	I	B	U	T	O	R	C	A	P	G	Z
L	O	P	I	S	T	O	N	R	I	N	G	S	E	X	K	G	J	F
H	R	P	A	F	V	V	V	A	C	A	P	Q	S	G	E	P	E	C
I	E	E	G	M	A	D	M	F	I	O	Y	H	S	Y	V	P	E	K
I	N	Y	N	A	L	U	N	J	Q	F	N	S	U	G	A	U	G	E
I	Y	B	O	F	V	S	O	B	X	H	T	D	R	Z	L	C	F	B
L	T	H	S	V	E	B	X	D	A	N	I	Y	E	R	V	F	W	G
P	Q	L	I	K	Q	W	Q	Y	G	J	U	P	W	M	E	J	E	V
E	Y	C	N	D	M	H	U	T	M	O	L	F	H	X	T	N	V	A
B	P	V	G	R	K	I	G	J	A	O	R	H	M	T	O	P	C	O

Can you find these words?

DISTRIBUTOR CAP
INTAKE VALVE
ANALYZING

EXHAUST VALVE
DIAGNOSING
PRESSURE

PISTON RINGS
MINIMUM
GAUGE

ACROSS/DOWN

TESTING COMPRESSION

ANSWER KEY

```
. . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . .
. . . . . E . . . . . . . . . . . . .
. . . . . X . . . . . . . . . . . . .
. . . . . H . . . A N A L Y Z I N G .
. . . . . A . . . . . . . . . N . . .
M I N I M U M . . . . . . P . T . . .
. . . D I S T R I B U T O R C A P . .
. . P I S T O N R I N G S E . K . . .
. . . A . V . . . . . . . S . E . . .
. . . G . A . . . . . . . S . V . . .
. . . N . L . . . . . . . U G A U G E
. . . O . V . . . . . . . R . L . . .
. . . S . E . . . . . . . E . V . . .
. . . I . . . . . . . . . . . E . . .
. . . N . . . . . . . . . . . . . . .
. . . G . . . . . . . . . . . . . . .
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TESTING COMPRESSION

N W J O O T F N Y G K P M Z J Y L Y P B T

H D Q V T K D P N R U J J U F D G A U G E

W X D G B I V I R U Q E G T B W C K M P A

I U Z M C Q Z S N E T F P T H R U U I O I

B T A H A Y T T M T S W A O O O B A I P S

K V H V L K P O P V A S Q T Q Q K V F P W

I M Y A P X W N E L E K U W G A C V O J O

M I N I M U M R Z G J B E R I L C F J T S

F A A X H N R I N G I T C V E H B N G E R

J J K S V X E N J R G Q U P A O S R Q S U

M J M J F H A G T D N F J Y M L T T Q Y C

I I E X H A U S T V A L V E Z T V J Q T B

I K H R H I I D U A I X N O Q V H E Z A J

V A N L R D I A G N O S I N G J Q P J S U

O Z V C O Z F A N V C M J Y K D I U Y H W

F S K V G P A E T Y Z A J Z T R Q D Y L K

V Y F H L O S W A C O O S J N F H F S Y S

W N P M A M A D Y Y R Z F Q O K A L U B H

K G A P Y U Z U C V P J Y S F O X O N G B

Can you find these words?

DISTRIBUTOR CAP
INTAKE VALVE
ANALYZING
EXHAUST VALVE
DIAGNOSING
PRESSURE
PISTON RINGS
MINIMUM
GAUGE

ACROSS/DOWN/DIAGONAL

TESTING COMPRESSION

ANSWER KEY

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. . . . . . . . . G . . . . . . . . P . .
. . . . . . . P N . . . . . . . G A U G E
. . . . . . . I R . . . . . . . C . . . .
. . . . . . Z S N E . . . . . R . . . . .
. . . . . Y . T . T S . . . O . . . . . .
. . . . L . . O . . A S . T . . . . . . .
. . . A . . . N . . . K U . . . . . . . .
M I N I M U M R . . . B E R . . . . . . .
. A . . . . . I . . I . . V E . . . . . .
. . . . . . . N . R . . . . A . . . . . .
. . . . . . . G T . . . . . . L . . . . .
. . E X H A U S T V A L V E . . V . . . .
. . . . . . I . . . . . . . . . . E . . .
. . . . . D I A G N O S I N G . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
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TESTING COMPRESSION I

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	3	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	4									XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	5							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	6								XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	7					XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. the order in which things should be done
4. looking closely to find the problem
5. the least or smallest
6. the pushing against something
7. a tool used to measure or test

DOWN:

3. finding the problem

TESTING COMPRESSION I

ANSWER KEY

ACROSS:		DOWN:	
4.	ANALYZING	3.	DIAGNOSING
5.	MINIMUM		
6.	PRESSURE		
7.	GAUGE		

```
      D

      I

      A N A L Y Z I N G

      G

  M I N I M U M

      O

P R E S S U R E

      I

      N

      G A U G E
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TESTING COMPRESSION II

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	2	XX XX	3											XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	4														XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

3. valve through which fuel mixture enters cylinder (2 words)
4. covered cap that has central point to receive voltage & send to outer points (2 words)

DOWN:

1. parts used to seal burning fuel charge above the piston (2 words)
2. part through which burned fuel passes from cylinder to exhaust manifold (2 words)

TESTING COMPRESSION II

ANSWER KEY

ACROSS:		DOWN:	
3.	INTAKEVALVE	1.	PISTONRINGS
4.	DISTRIBUTORCAP	2.	EXHAUSTVALVE

				P										
		E		I	N	T	A	K	E	V	A	L	V	E
		X		S										
		H		T										
		A		O										
		U		N										
D	I	S	T	R	I	B	U	T	O	R	C	A	P	
		T		I										
		V		N										
		A		G										
		L		S										
		V												
		E												

LEARNING WORDS USED IN INSPECTING ENGINE LUBRICATION SYSTEM

INTRODUCTION

The lubrication system is actually an integral part of the engine. The operation of the system, like all other engine systems, is essential to the operation of the engine. A basic understanding of the lubricating system is critical before the mechanic can properly diagnose some of the system problems. In this unit you will learn the technical vocabulary related to the engine lubrication system.

PERFORMANCE OBJECTIVES

You will match 7 words used in inspecting engine lubrication systems with their definitions. Your teacher will provide a list of words and definitions. You should match at least 6 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.

2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

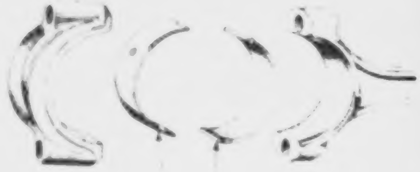
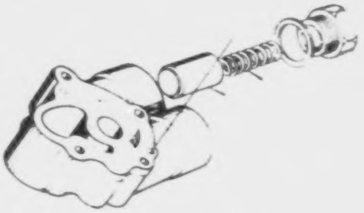
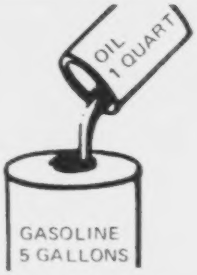
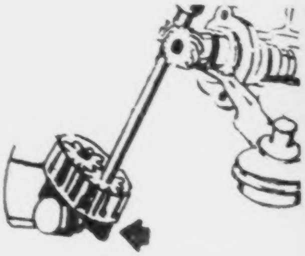
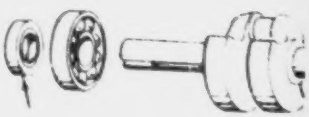
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

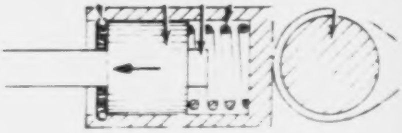
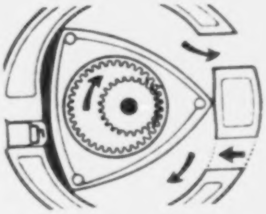
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

INSPECTING ENGINE LUBRICATION SYSTEM

bearing (bear ing)	lubricated surface on which a part rotates	
bypass valve (by pass valve)	a part that can open and let fluid go through a different way	
dilution (di lu tion)	a liquid solution that has been thinned	
oil pump (oil pump)	a device used to force oil to moving parts of the engine	
oil seals (oil seals)	parts used to keep oil from flowing past a certain area	

INSPECTING ENGINE LUBRICATION SYSTEM

plunger (plung er)	a rod or piston that operates with a plunging motion	
rotary (ro ta ry)	turning	

INSPECTING ENGINE LUBRICATION SYSTEM

Word Find Puzzles for Units AM-18 and AM-19 have been combined into one group of puzzles and may be found on Pages AM-19-3 to AM-19-5.

ENGINE LUBRICATION

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	1							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	2	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	3											XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	4							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	5						6	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

1. a device used to force oil to parts of the engine (2 words)
3. part that can open and let fluid go through a different way (2 words)
4. the area of a unit on which a turning part sits
5. the rod that carries the valves in a tire valve unit

DOWN:

1. parts used to keep oil from flowing past a certain area (2 words)
2. a liquid solution that has been thinned down
6. turning around

ENGINE LUBRICATION

ANSWER KEY

ACROSS:		DOWN:	
1.	OILPUMP	1.	OILSEALS
3.	BYPASSVALVE	2.	DILUTION
4.	BEARING	6.	ROTARY
5.	PLUNGER		

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      O I L P U M P

      I

      L

      S         D

      E         I

B Y P A S S V A L V E

      L         U

      S         T

        B E A R I N G

                O

          P L U N G E R

                      O

                      T

                      A

                      R

                      Y
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LEARNING WORDS USED IN CHANGING ENGINE OIL AND FILTER

INTRODUCTION

One of the most common operations of the automotive service trade is changing the engine oil and filter. The mechanic is often asked to perform this task, especially when there are no separate servicemen or facilities for this purpose. The frequency of this operation is one of the most important factors that determines the life of the engin. In this unit you will learn the technical vocabulary related to the engine oil and filter.

PERFORMANCE OBJECTIVES

You will match 8 words used in changing engine oil and filter with their definitions. Your teacher will provide a list of words and definitions. You should match at least 6 of the words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definitoin as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

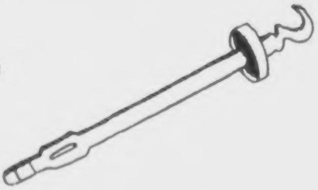
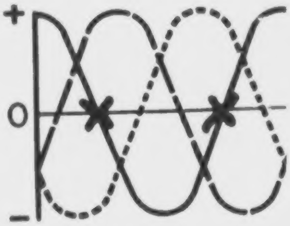
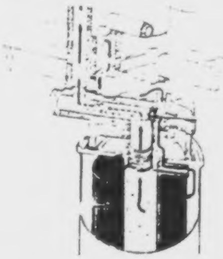
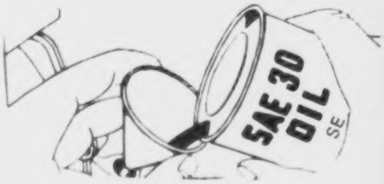
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

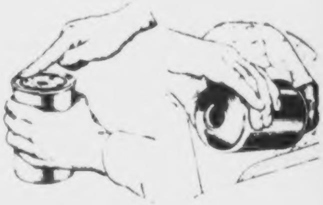
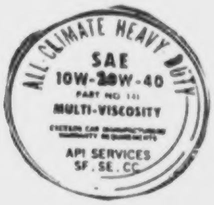
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

CHANGING ENGINE OIL AND FILTER

dipstick (dip stick)	a rod used to measure the level of engine oil	
frequency (fre quen cy)	how often something happens	
full flow (full flow) oil filter (oil fil ter)	a device which filters all the oil moving through the lubrication system	
lubricant (lu bri cant)	a slippery substance that reduces friction	
lubricate (lu bri cate)	using grease or oil between two parts to slow down wear	

CHANGING ENGINE OIL AND FILTER

oil filter (oil fil ter)	a device used to strain engine oil to take out small pieces of dirt and metal 
oxidation (ox i da tion)	rusting; the wearing away of a metal due to combining with oxygen (ox y gen)
viscosity (vis cos i ty)	how easily a liquid flows  ALL-CLIMATE HEAVY DUTY SAE 10W-20W-40 PART NO 141 MULTI-VISCOSITY API SERVICES SF. SE. CC

ENGINE OIL & LUBRICATION

B Y P A S S V A L V E P L U N G E R B T A
Q P O K O I L S E A L S B E A R I N G Y R
X I O W H Z A P V T K Y D V F A E R W T Y
O U L I B B N V J F K C F V Q K S K A H P
N G R G M E E C S T B C U U B L L F Z Q F
E K J Q O U H A K J V V F J M G O C O P Q
I N I O A S N V W N A T O A U L B G K N J
R O T A R Y V Z Y Z A L L H O I L P U M P
F K I M M A C C K U X K O D Y O A J U Y C
M E H Z W V A K G I L U K Y T M T F U L J
S G M S Q J O M N I F K E D I L U T I O N
M C F B F C E R T O X I D A T I O N X W C
O I L F I L T E R C U G M Z E G Y A X V G
H C Y U W T Y V T G L Z Y D I U X V N Q L
A A W H M Q U V O R C L D W N F L X R Y H
T V E K D R Y S A Y L O S C G K V F B W A
K V Z N F N B E V Y D Q F W N A P S X E J
F R E Q U E N C Y O C O R S P A I M F L H

Can you find these words?

BYPASS VALVE
FREQUENCY
DILUTION
BEARING

OXIDATION
PLUNGER
ROTARY

OIL FILTER
OIL SEALS
OIL PUMP

ACROSS

ENGINE OIL & LUBRICATION

ANSWER KEY

```
B Y P A S S V A L V E P L U N G E R . . .
. . . . O I L S E A L S B E A R I N G . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
R O T A R Y . . . . . . . . O I L P U M P
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . D I L U T I O N
. . . . . . . . . O X I D A T I O N . . .
O I L F I L T E R . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
F R E Q U E N C Y . . . . . . . . . . . .
```

ENGINE OIL & LUBRICATION

B	F	W	Q	D	H	D	D	O	I	L	P	U	M	P	W	P	I
W	F	Q	W	F	I	B	Y	I	Q	V	Y	T	F	B	M	B	Z
D	Y	B	V	U	N	T	A	L	T	U	Q	E	B	K	L	P	S
A	A	Y	Z	J	C	O	A	S	E	B	Z	G	N	A	V	C	G
E	T	O	W	T	L	X	O	E	D	F	Z	D	V	R	F	H	A
N	B	O	J	B	V	I	O	A	H	V	O	D	Z	O	O	F	H
L	U	U	U	M	G	D	A	L	U	D	I	L	U	T	I	O	N
G	S	J	B	Y	P	A	S	S	V	A	L	V	E	A	H	X	Y
P	B	Q	R	F	Y	T	O	Z	V	J	F	F	B	R	V	R	E
T	E	J	I	P	Y	I	A	W	E	J	I	X	H	Y	X	C	N
I	A	F	S	K	Y	O	A	A	N	P	L	U	N	G	E	R	E
F	R	E	Q	U	E	N	C	Y	O	U	T	Y	C	U	D	A	P
B	I	M	M	J	D	Y	C	O	S	O	E	U	M	C	E	N	Y
G	N	F	W	W	I	F	M	X	U	G	R	Y	D	Y	B	S	Y
V	G	L	L	D	U	X	E	A	W	W	K	K	S	H	N	C	A

Can you find these words?

BYPASS VALVE
FREQUENCY
DILUTION
BEARING

OXIDATION
PLUNGER
ROTARY

OIL FILTER
OIL SEALS
OIL PUMP

ACROSS/DOWN

ENGINE OIL & LUBRICATION

ANSWER KEY

```
. . . . . . . . O I L P U M P . . .
. . . . . . . . I . . . . . . . . .
. . . . . . . . L . . . . . . . . .
. . . . . . O . S . . . . . . . . .
. . . . . . X . E . . . . . R . . .
. . . . . . I . A . . O . . O . . .
. . . . . . D . L . D I L U T I O N
. . . B Y P A S S V A L V E A . . .
. B . . . . T . . . . F . . R . . .
. E . . . . I . . . . I . . Y . . .
. A . . . . O . . . P L U N G E R .
F R E Q U E N C Y . . T . . . . . .
. I . . . . . . . . . E . . . . . .
. N . . . . . . . . . R . . . . . .
. G . . . . . . . . . . . . . . . .
```

ENGINE OIL & LUBRICATION

C X F O W D T U F W Y G G D A G E C F S Z

A Y P K D V N C T N Y P H Z D V G S Q X Z

A Q E V U U J S Q U N R O I L F I L T E R

B S N W F P C E I O R Z A A F W R K D A F

G C D N O H T V I X I B V B Z Q D D U X D

J I O P M Q R T F I I S B A F G S T G B W

E Y K B G I U U A D S T Y A G P N R M G D

R U Y B U L B B E A R I N G C Q B L I P Z

M X J D I R T J P T P I O T N M L E W G D

M T F D G S S Y J I B Y S S Q A E O G G P

K D B B P A B F M O C O L Z G F Q Y T Y O

U R Q W L U E D F N U A D P W M J N Y U W

R V T D U N L Q E V E H M O V R W R T B Q

I O N K N K G U X S Y U G C S J D H W S F

K F T I G D Q V L H P O R D E D N U Y G Y

Y B N A E E V I W L T R Q N I H G C D O L

K P O A R R O S I P A M C Y W U O H D R P

X X F F W Y A O N H H M A M P O G O D Q W

Can you find these words?

BYPASS VALVE
FREQUENCY
DILUTION
BEARING
OXIDATION
PLUNGER
ROTARY
OIL FILTER
OIL SEALS
OIL PUMP

ACROSS/DOWN/DIAGONAL

ENGINE OIL & LUBRICATION

ANSWER KEY

```
. . . . . . . . . . . . . . . . E . . . .
. . . . . . . . . . . . . . . V . . . . .
. . . . . . . . . . N . O I L F I L T E R
. . . . . . . . . O . . . A . . . . . . .
. . . . . . . . I X . . V . . . . . . . .
. . . . . . . T . I . S . . . . . . . . .
. . . . . . U . . D S . . . . . . . . . .
. . . . . L . B E A R I N G . . . . . . .
. . . . I . . . P T . . . . . . . . . . .
. . . D . . . Y . I . Y . S . . . . . . .
. . . . P . B . . O C . L . . . . . . . .
. . . . L . . . . N . A . P . . . . . . .
R . . . U . . . E . E . M . . . . . . . .
. O . . N . . U . S . U . . . . . . . . .
. . T . G . Q . L . P . . . . . . . . . .
. . . A E E . I . L . . . . . . . . . . .
. . . . R R O . I . . . . . . . . . . . .
. . . F . Y . O . . . . . . . . . . . . .
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ENGINE OIL & LUBRICATION

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	2									XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	3									XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. rusting; the wearing away of a metal due to oxygen
3. how often something happens

DOWN:

2. a device used to strain oil in the engine to take out small pieces (2 words)

ENGINE OIL & LUBRICATION

ANSWER KEY

ACROSS:	DOWN:
2. OXIDATION	2. OILFILTER
3. FREQUENCY	

```
O X I D A T I O N
I
L
F R E Q U E N C Y
I
L
T
E
R
```

LEARNING WORDS USED IN REMOVING AND REPLACING THE CYLINDER HEAD

INTRODUCTION

The automobile engine's cylinder head is one of the most important parts of the engine. The mechanic may have to remove the cylinder head to correct specific problems such as a leak between the head and block. The cylinder head may be removed during an engine overhaul or for a valve reconditioning job. Regardless of the reason for its removal, the mechanic must observe proper procedures and techniques. In this unit you will learn the technical vocabulary related to removing and replacing the cylinder head.

PERFORMANCE OBJECTIVES

You will match 8 words used in removing and replacing the cylinder head with their definitions. Your teacher will provide a list of words and definitions. You should match at least 6 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.

2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definitoin as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

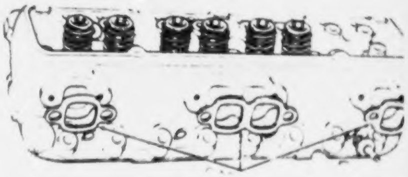
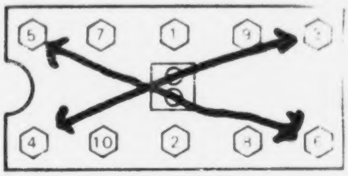
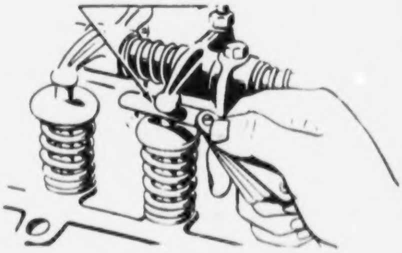
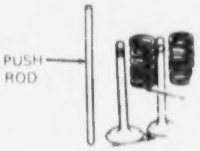
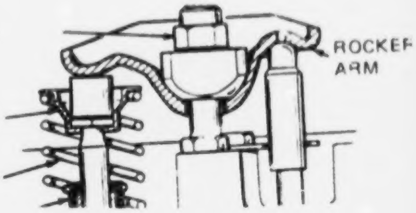
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

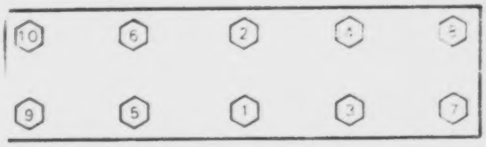
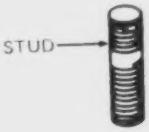
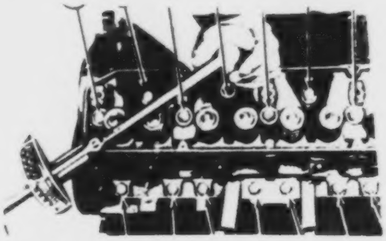
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

REMOVING AND REPLACING CYLINDER HEAD

cylinder head (cyl in der head)	large metal casting fastened to the top of cylinder block	
diagonal (di ag o nal)	from one corner to the opposite corner	
feeler **gauge** (feel er **gauge**)	**a thin strip of steel used to check the space between parts**	
push rods (push rods)	rods that join valve lifter to rocker arm	
rocker arm (rock er arm)	part of the valve mechanism that changes the direction of travel	

REMOVING AND REPLACING CYLINDER HEAD

sequence (se quence)	**the order in which something happens**	
studs (studs)	**metal rods that are threaded on both ends**	
torque (torque) specification (spec i fi ca tion)	**the amount of tightening for bolts**	

CYLINDER HEAD

C Y L I N D E R H E A D K D N W Q Z

N T J E H Y T O O S A W K Z X N L O

F R C R V K X L G I A K U I J U L Z

D R E H R C A G X V S X G O A P P W

W H V X S D D I M D K D B V F T E A

A S N F F Q Y E D A N R D F G Q H E

R O C K E R A R M S R L C X Z X I B

Q K I U L H T V H T B O T P I V Y M

F E E L E R G A U G E O A P E C K D

J V D M O T A P P M A B H J E A O C

L B B Y I E V A C U U M M V O N E N

D Q S E Q U E N C E G A S K E T S H

U L O H D J W L N E G X U P J Z D C

P U S H R O D S Z M O L T N G C E N

U B W O G M V S T U D S L I H G A K

Z W D I A G O N A L M J E M J C C Y

K U R V M F A M U U W P Y D H R F G

T O R Q U E Z A O X N H L R Y P M N

Can you find these words?

CYLINDER HEAD
SEQUENCE
GASKETS
TORQUE
FEELER GAUGE
PUSH RODS
STUDS
ROCKER ARMS
DIAGONAL
VACUUM

ACROSS

CYLINDER HEAD

ANSWER KEY

```
C Y L I N D E R H E A D . . . . . .
. . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . .
R O C K E R A R M S . . . . . . . .
. . . . . . . . . . . . . . . . . .
F E E L E R G A U G E . . . . . . .
. . . . . . . . . . . . . . . . . .
. . . . . . V A C U U M . . . . . .
. . S E Q U E N C E G A S K E T S .
. . . . . . . . . . . . . . . . . .
P U S H R O D S . . . . . . . . . .
. . . . . . . S T U D S . . . . . .
. . D I A G O N A L . . . . . . . .
. . . . . . . . . . . . . . . . . .
T O R Q U E . . . . . . . . . . . .
```

CYLINDER HEAD

H C C U P P N Q L U X U W P P S H Z

G M O L H T F H Z A O G C P P J J E

S R T R L Q O A A D O G S U V V Y E

T H F I E T J F O D A G A S K E T S

O R C E F A K A X Z O I T H Z K N G

R O C K E R A R M S O L A R H B I M

Q X A S E Q U E N C E W E O L B A C

U Q C Y L I N D E R H E A D W A X R

E N H Y E S O I J O G X Q S J F P U

Z B V I R Z V A C U U M N O J H L X

X J A P G K A G Z O I G D P M N E R

I P C D A D H O R O S B D M N I N L

D Y S T U D S N W O N S R N N T S L

I D I D G R Q A H V U A J W V A M Q

I A W O E I R L N S U N E K G D K L

Can you find these words?

CYLINDER HEAD
SEQUENCE
GASKETS
TORQUE

FEELER GAUGE
PUSH RODS
STUDS

ROCKER ARMS
DIAGONAL
VACUUM

ACROSS/DOWN

CYLINDER HEAD

ANSWER KEY

```
. . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . P . . . .
. . . . . . . . . . . . . U . . . .
T . . . . . . . . . . G A S K E T S
O . . . F . . . . . . . . H . . . .
R O C K E R A R M S . . . R . . . .
Q . . S E Q U E N C E . . O . . . .
U . C Y L I N D E R H E A D . . . .
E . . . E . . I . . . . . S . . . .
. . . . R . V A C U U M . . . . . .
. . . . G . . G . . . . . . . . . .
. . . . A . . O . . . . . . . . . .
. . S T U D S N . . . . . . . . . .
. . . . G . . A . . . . . . . . . .
. . . . E . . L . . . . . . . . . .
```

CYLINDER HEAD

P O M J F F O X E R C O X Z B F P
L A O R F C J I X E Z Y S B M C R
H Y S O D K Z K P R W M A E W I P
I O O T S P R T R S R R A Q L X O
Q I B B U O Q F P A S O V H M V D
O M N I K D O F R L N Y J D L S J
M M Q Y I M S E Q U E N C E D R Y
H N Z G A S K E T S S F C O H H U
F M Z Y N C Y L I N D E R H E A D
V T M Q O K A E Z K B H T M P Y A
Z A Z R L N B R S T S S Y A W G B
N G J P O B S G I U D K H I V Y O
A P V G N K J A P Y V Y B Z D C T
N T A T O R Q U E R P U C A W E L
D I C G G C Y G U G Z W E T J M F
D M U L C D C E R Y F P B E N X Q
W B U X V F F E U R D A C P X A Y
V M M I O T V C B G R E Z E T K L

Can you find these words?

CYLINDER HEAD
SEQUENCE
GASKETS
TORQUE

FEELER GAUGE
PUSH RODS
STUDS

ROCKER ARMS
DIAGONAL
VACUUM

ACROSS/DOWN/DIAGONAL

CYLINDER HEAD

ANSWER KEY

```
. . . . . . . . . . . . . . . . .
. . . . . . . . . . . . S . . . .
. . S . . . . . . . . M . . . . .
. . . T . . . . . . R . . . . . .
. . . . U . . . . A . . . . . . .
. . . . . D . F R . . . . . . S .
. . . . . . S E Q U E N C E D . .
. . . G A S K E T S . . . O . . .
. . . . . C Y L I N D E R H E A D
. . . . O . A E . . . H . . . . .
. . . R . N . R . . S . . . . . .
. . . . O . . G . U . . . . . . .
. . V G . . . A P . . . . . . . .
. . A T O R Q U E . . . . . . . .
. I C . . . . G . . . . . . . . .
D . U . . . . E . . . . . . . . .
. . U . . . . . . . . . . . . . .
. . M . . . . . . . . . . . . . .
```

CYLINDER HEAD

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	2						3		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	4	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	5											XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	6								XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	8					XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. the order in which something happens
5. a thin strip of steel used to check the space between parts (2 words)
6. from one corner to the opposite corner
8. metal rods that are threaded on both ends

DOWN:

3. a metal section fastened to the top of the cylinder (2 words)
4. rods that join the valve lifter to the rocker arm (2 words)

CYLINDER HEAD

ANSWER KEY

ACROSS:

2. SEQUENCE
5. FEELERGAUGE
6. DIAGONAL
8. STUDS

DOWN:

3. CYLINDERHEAD
4. PUSHRODS

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S E Q U E N C E
            Y         P
      F E E L E R G A U G E
            I         S
  D I A G O N A L     H
            D         R
            E         O
            R         D
            H         S
            E
            A
      S T U D S
```

LEARNING WORDS USED IN MAINTAINING UNIVERSAL JOINTS

INTRODUCTION

The purpose of the drive shaft is to connect the transmission to the differential pinion. There should be a straight line connection between the transmission and the rear axle. This is impossible, however, because the rear axle is constantly moving up and down to follow the surface of the road. Therefore, universal joints are placed at each end of the drive shaft to allow the shaft to bend without breaking. There are several different types of universal joints, but all are designed for the same purpose. When checking out a suspected drive shaft or universal joint vibration or noise, follow a logical sequence of steps. In this unit you wil learn the technical vocabulary related to maintaining universal joints.

PERFORMANCE OBJECTIVES

You will match 15 words used in maintaining universal joints with their definitions. Your teacher will provide a list of words and definitions. You should match at least 12 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.

2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definitoin as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

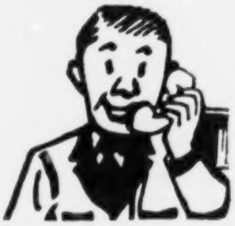
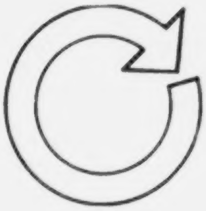
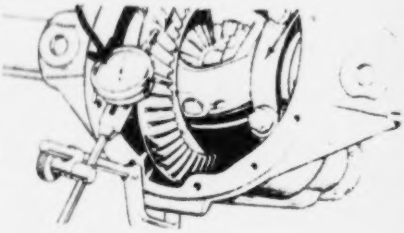
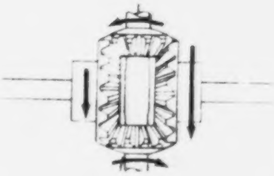
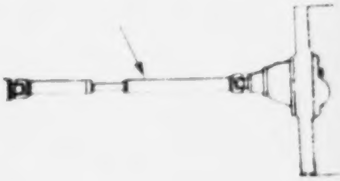
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

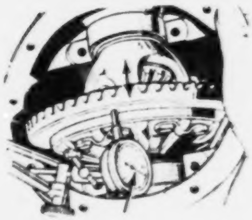
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

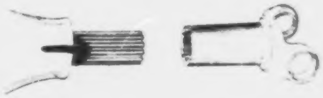
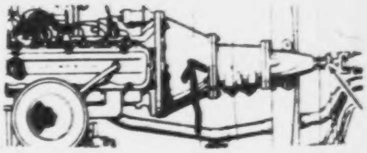
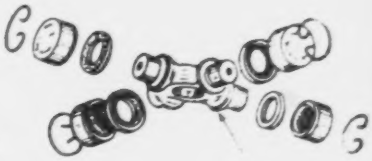
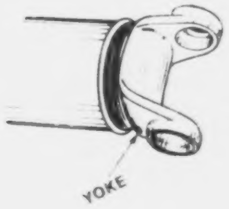
MAINTAINING UNIVERSAL JOINTS

audible (au di ble)	can be heard	
circumference (cir cum fer ence)	the outside line of a circle	
dial indicator (dial in di ca tor)	a tool that shows measurement by a needle that moves across a dial face	
differential (dif fer en tial)	a unit that will allow both drive axles to turn at different speeds	
drive shaft (drive shaft)	a long tube that joins the transmission (trans mis sion) output shaft to the differential (dif fer en tial) pinion shaft	

MAINTAINING UNIVERSAL JOINTS

exerted (ex ert ed)	force put forth strongly	SEAL PULLER
mechanical (me chan i cal) vibrations (vi bra tions)	rapid back and forth movement that is felt	
perpendicular (per pen dic u lar)	at a right angle	
pinion angle gauge (pin ion an gle) gauge (gauge)	a tool used to measure the drive pinion angle with the driving gear	
propeller shaft (pro pel ler shaft)	same as a drive shaft	

MAINTAINING UNIVERSAL JOINTS

splines (splines)	ridges or grooves that allow one part to fit into another part	
transmission (trans mis sion)	a device that gives different gear ratios between the engine and drive wheels	
universal joints (u ni ver sal) joints (joints)	flexible joints in the drive shaft that allow changes in driving shaft length and angle	
wheel hop (wheel hop)	a hopping of drive wheels when tires lose traction as the vehicle is accelerated	
yoke (yoke)	curved slotted part of the universal joint	

UNIVERSAL JOINTS

U N I V E R S A L J O I N T S K O E T E T

P E R P E N D I C U L A R E X E R T E D M

D I F F E R E N T I A L U M I K U Q R O I

T R A N S M I S S I O N S P L I N E S C F

D R I V E S H A F T Y O K E K Q E U F R S

T J E N B Z D I A L I N D I C A T O R Q U

V I B R A T I O N S Q J F L C X U K R J T

Z Y I Z A U D I B L E F V V Q E Z V W I J

Z R I D C H T R O V G U W C G G H K V A U

A Q O G U P S D M P Q N X M Y M T Q X W J

L C I R C U M F E R E N C E W W A R V X U

P A Q H T O V W I T X R B U Z G E X Z X R

P O N O C E A S O R Y P E A H P G J T A P

Y G I D Z P Q N L O C E N S I V O S W P Z

T Y R D B U Z K V J Q A Z M Q S G W Z D W

R U O D Z W Y V V X B O B J B P S F C X W

D F V V Z J Z Q C I Z H E M L K E F Y U K

X G W D L C A P R O P E L L E R S H A F T

O C I D L L S K D I S O W H E E L H O P S

Can you find these words?

UNIVERSAL JOINTS
DIAL INDICATOR
DRIVE SHAFT
WHEEL HOP
AUDIBLE

PROPELLER SHAFT
CIRCUMFERENCE
DIFFERENTIAL
SPLINES
YOKE

PERPENDICULAR
TRANSMISSION
VIBRATIONS
EXERTED

ACROSS

UNIVERSAL JOINTS

ANSWER KEY

```
U N I V E R S A L J O I N T S . . . . . .
P E R P E N D I C U L A R E X E R T E D .
D I F F E R E N T I A L . . . . . . . . .
T R A N S M I S S I O N S P L I N E S . .
D R I V E S H A F T Y O K E . . . . . . .
. . . . . . D I A L I N D I C A T O R . .
V I B R A T I O N S . . . . . . . . . . .
. . . . A U D I B L E . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. C I R C U M F E R E N C E . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . P R O P E L L E R S H A F T
. . . . . . . . . . . . W H E E L H O P .
```

UNIVERSAL JOINTS

Y	M	B	D	J	G	P	I	O	V	B	F	B	U	A	Z	L	H	X	C	F
M	W	D	W	W	S	E	Q	V	O	N	C	O	P	E	O	N	E	O	S	T
S	T	Z	H	N	Z	R	X	A	U	D	I	B	L	E	K	R	X	P	K	X
B	O	V	B	H	T	P	K	O	X	F	R	Z	Z	Y	O	K	E	Z	Y	I
O	L	V	S	F	N	E	D	O	F	I	C	O	S	W	E	O	R	O	O	B
D	B	B	X	U	Y	N	I	S	P	P	U	N	W	W	F	Y	T	F	S	A
J	J	X	A	Q	B	D	A	O	C	R	M	Z	N	H	D	W	E	I	X	L
V	O	E	W	J	S	I	L	O	L	O	F	T	W	E	B	V	D	K	R	K
K	C	Y	P	D	H	C	I	O	K	P	F	F	K	E	N	Q	R	F	L	D
E	G	R	Y	R	M	U	N	I	V	E	R	S	A	L	J	O	I	N	T	S
F	M	W	N	I	Q	L	D	I	P	L	E	S	Q	H	X	S	A	C	F	N
D	F	P	M	V	E	A	I	W	L	L	N	P	R	O	Z	N	W	T	L	O
Z	P	M	U	E	S	R	C	O	Z	E	C	L	S	P	I	U	I	K	L	P
Z	Z	U	A	S	E	U	A	J	V	R	E	I	O	G	B	R	J	G	H	M
T	E	L	C	H	O	M	T	Z	R	S	V	N	D	U	E	M	Z	U	T	Q
V	I	B	R	A	T	I	O	N	S	H	W	E	B	H	M	H	N	H	K	R
E	T	M	M	F	E	D	R	T	R	A	N	S	M	I	S	S	I	O	N	M
S	D	U	V	T	V	O	R	D	I	F	F	E	R	E	N	T	I	A	L	G
U	O	L	R	J	C	C	U	T	X	T	G	Z	G	M	Y	W	B	L	F	V

Can you find these words?

UNIVERSAL JOINTS
DIAL INDICATOR
DRIVE SHAFT
WHEEL HOP
AUDIBLE

PROPELLER SHAFT
CIRCUMFERENCE
DIFFERENTIAL
SPLINES
YOKE

PERPENDICULAR
TRANSMISSION
VIBRATIONS
EXERTED

ACROSS/DOWN

UNIVERSAL JOINTS

ANSWER KEY

```
. . . . . . P . . . . . . . . . . . . . .
. . . . . . E . . . . C . . . . . E . . .
. . . . . . R . A U D I B L E . . X . . .
. . . . . . P . . . . R . . Y O K E . . .
. . . . . . E D . . . C . . . . . R . . .
. . . . . . N I . . P U . . W . . T . . .
. . . . . . D A . . R M . . H . . E . . .
. . . . . . I L . . O F . . E . . D . . .
. . . . D . C I . . P E . . E . . . . . .
. . . . R . U N I V E R S A L J O I N T S
. . . . I . L D . . L E S . H . . . . . .
. . . . V . A I . . L N P . O . . . . . .
. . . . E . R C . . E C L . P . . . . . .
. . . . S . . A . . R E I . . . . . . . .
. . . . H . . T . . S . N . . . . . . . .
V I B R A T I O N S H . E . . . . . . . .
. . . . F . . R T R A N S M I S S I O N .
. . . . T . . . D I F F E R E N T I A L .
. . . . . . . . . . T . . . . . . . . . .
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UNIVERSAL JOINTS

Z P W N C H D N S N Q Y O K E V H R M T S
J E O A U D I B L E K X F I U N D M F C A
T R A N S M I S S I O N O I Q N M A H N S
P P J C B H J F G W I O G K C V H Q S C E
U E S S P W H V F H I Z Y H E S X R V U Z
X N C I R C U M F E R E N C E M S Y U D K
L D I N O C G A I E R Y M V Q N P U V U R
E I I V P E B O R L H E I S O P F E Z C Q
L C I A E R O T Z H F R N I V O Q A Y R R
E U O I L R T K A O D M T T X D V G D F R
U L Q C L I S I G P G A F V I S Z C F H Y
T A J E E O N A X B R M J T X A M T Y U R
P R I I R C O D L B Y R Z Q K F L L U Q S
L L T I S T I O I J N I F V R E F U B E K
G W Y I H B E V I C O A U A R X L I N M T
P X P I A N U S B O A I E R H T H I K K S
B N B I F R C T T R O T N U O R L G P Z O
E X E R T E D F S J L I O T G P Z W K I G
J C X H Q V V H F N Y R O R S B K V R L M

Can you find these words?

UNIVERSAL JOINTS
DIAL INDICATOR
DRIVE SHAFT
WHEEL HOP
AUDIBLE

PROPELLER SHAFT
CIRCUMFERENCE
DIFFERENTIAL
SPLINES
YOKE

PERPENDICULAR
TRANSMISSION
VIBRATIONS
EXERTED

ACROSS/DOWN/DIAGONAL

UNIVERSAL JOINTS

ANSWER KEY

```
. P . . . . . . . . . Y O K E . . . . T .
. E . A U D I B L E . . . . . . . . F . .
T R A N S M I S S I O N . . . . . A . . .
. P . . . . . F . W . . . . . . H . . . .
U E . . P . . . F H . . . . . S . . . . .
. N C I R C U M F E R E N C E . S . . . .
. D I . O . . . . E R . . V . N . . . . .
. I I V P . . . . L . E I . O . . . . . .
. C . A E . . . . H . R N I . . . . . . .
. U . . L R . . . O D . T T . . . . . . .
. L . . L I S . . P . A . . I . . . . . .
. A . . E . N A . . R . . . . A . . . . .
. R . . R . . D L B . . . . . . L . . . S
. . . . S . . . I J . . . . . . . . . E .
. . . . H . . V . C O . . . . . . . N . .
. . . . A . . . . . A I . . . . . I . . .
. . . . F . . . . . . T N . . . L . . . .
E X E R T E D . . . . . O T . P . . . . .
. . . . . . . . . . . . . R S . . . . . .
```

UNIVERSAL JOINTS I

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	2													XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	4												XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX	6							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. tool that shows measurement by a needle that moves across a dial face (2 words)
4. a unit that will drive both rear axles at the same time
6. can be heard

DOWN:

1. the outside line of a circle
4. a long tube that joins the transmission output shaft to the differential pinion shaft (2 words)

UNIVERSAL JOINTS I

ANSWER KEY

ACROSS:		DOWN:	
2.	DIALINDICATOR	1.	CIRCUMFERENCE
4.	DIFFERENTIAL	4.	DRIVESHAFT
6.	AUDIBLE		

```
    C
  D I A L I N D I C A T O R
    R
    C
    U
    M
D I F F E R E N T I A L
R   E
I   R
V   E   A U D I B L E
E   N
S   C
H   E
A
F
T
```

UNIVERSAL JOINTS II

XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	2									3				XX XX	XX XX	4	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	6	XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. at a right angle to something

DOWN:

1. a device that gives different gear ratios between the engine and rear wheels
3. flexible joints in the drive shaft that let changes happen in driving shaft & driven shaft (2 words)
4. a hopping of the rear wheels when a vehicle speeds up (2 words)
6. action put forth strongly

UNIVERSAL JOINTS II

ANSWER KEY

ACROSS:

2. PERPENDICULAR

DOWN:

1. TRANSMISSION
3. UNIVERSALJOINTS
4. WHEELHOP
6. EXERTED

```
    T
P E R P E N D I C U L A R     W
    A             N           H
    N             I       E   E
    S             V       X   E
    M             E       E   L
    I             R       R   H
    S             S       T   O
    S             A       E   P
    I             L       D
    O             J
    N             O
                  I
                  N
                  T
                  S
```

UNIVERSAL JOINTS III

XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	2		3					4	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
5				XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	6							XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. a hopping of the rear wheels when a vehicle speeds up (2 words)
5. a curved part that makes the spider turn, which turns the driven shaft
6. can be heard

DOWN:

1. ridges on a shaft made to fit into another part
3. action put forth strongly
4. a drive shaft that needs to be balanced (2 words)

UNIVERSAL JOINTS III

ANSWER KEY

ACROSS:	DOWN:
2. WHEELHOP	1. SPLINES
5. YOKE	3. EXERTED
6. AUDIBLE	4. PROPELLERSHAFT

```
          S

          P

  W H E E L H O P

      X   I     R

Y O K E   N     O

      R   E     P

      T   S     E

      E         L

      D         L

                E

                R

                S

                H

                A U D I B L E

                F

                T
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LEARNING WORDS USED IN INSPECTING AND TESTING AUTOMATIC TRANSMISSIONS

INTRODUCTION

Fluid leaks are sometimes very difficult to find and, in many situations, even more difficult to repair. Without fluid pressure, the automatic transmission will not function, and with a slight leak the fluid will soon be gone and the transmission will become lifeless. Knowing where the leak points are and how to repair them becomes the responsibility of the repairman. Many small leaks that are easily repaired will result in many dollars saved for the customer in repair bills. When the transmission fluid level becomes low because of leaks, much damage can be done to the transmission. After the leaks are repaired, a road test should be performed to assure proper function of speed changes and other malfunctions that may cause problems later, such as an improperly adjusted band which will fail when left alone. In this unit you will learn the technical vocabulary related to inspecting and testing automatic transmissions.

PERFORMANCE OBJECTIVES

You will match 13 words used in inspecting and testing automatic transmissions with their definitions. Your teacher will provide a list of words and definitions. You should match at least 10 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE), it.

2. COVER **only** the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definitoin as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

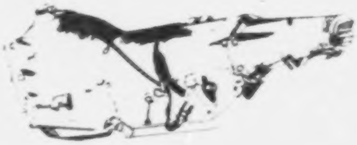
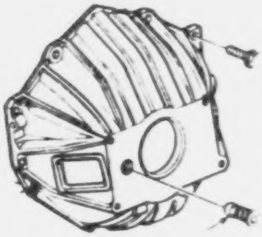
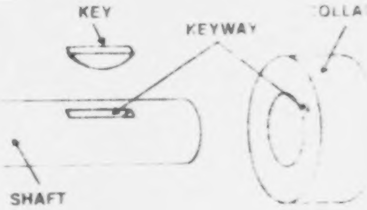
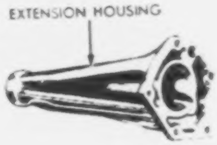
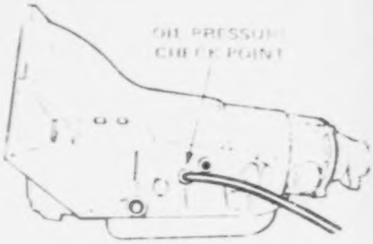
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

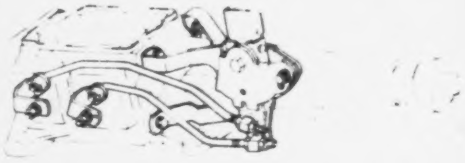
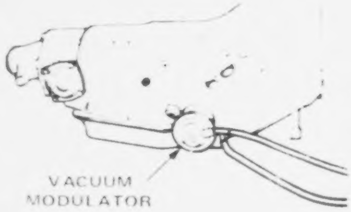
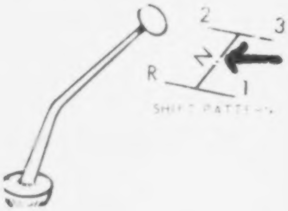
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

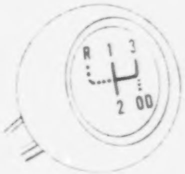
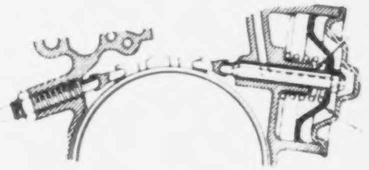
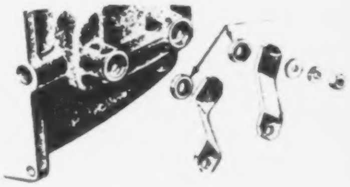
INSPECTING & TESTING AUTOMATIC TRANSMISSIONS

automatic (au to mat ic) transmission (trans mis sion)	transmission that changes gear ratios automatically	
bell housing (bell hous ing)	the housing that joins the transmission (trans mis sion) and engine	
detent (de tent)	a device used to fit into a notch that prevents movement	 KEY KEYWAY OLLA SHAFT
extension (ex ten sion)	a short name for transmission (trans mis sion) extension	 EXTENSION HOUSING
fluid pressure (flu id pres sure)	force caused by the hydraulic (hy draul ic) fluid under pump pressure	 OIL PRESSURE CHECK POINT

INSPECTING & TESTING AUTOMATIC TRANSMISSIONS

manual (man u al) linkage (link age)	rods that can be moved by the operator to select gear ratios or speed	
manual (man u al) transmission (trans mis sion)	changing gears by hand	
modulator (mod u la tor)	a unit that controls pressure	
neutral (neu tral)	a position of gears in a power system when power is disconnected from the drive train	
O-ring (O ring)	a seal for liquids that is made like a ring	"O" Ring for GM equalizer tube.

INSPECTING & TESTING AUTOMATIC TRANSMISSIONS

quadrant (quad rant)	the letters and numbers that show the gear positions	
servo (ser vo)	a device used to push or pull another part	
selector (se lec tor) shaft seal (shaft seal)	the seal of a transmission (trans mis sion) around the gear selector shaft	

AUTOMATIC TRANSMISSION

S E L E C T O R S H A F T K D C T P W Q W
P N H X M J P N W P I G Z F R O A C X V T
R F B E L L H O U S I N G R Q P V I J R C
T C Q Y X Z C Z N Y Z F Q D A P R B F Y D
M A N U A L E H O R I N G M K R L N I F P
M A N U A L L I N K A G E Q U A D R A N T
J U U P F P I H V J M L B E R E K F X C G
P V U R G O B P V Z C S R I M B M V I E T
W Z S E R V O Y D H Y D H B V R M A J Y H
D E T E N T D I U C U S L F H I Z N Q X Q
F L U I D P R E S S U R E U C V W I M Y I
T R A N S M I S S I O N M O D U L A T O R
O S T M A K I S N O A U T O M A T I C U M
E X T E N S I O N Y E X C J N U O J V O M
S H A F T S E A L L D U J D Z H V W D U P

Can you find these words?

SELECTOR SHAFT
TRANSMISSION
SHAFT SEAL
AUTOMATIC
DETENT
MANUAL LINKAGE
BELL HOUSING
MODULATOR
QUADRANT
SERVO
FLUID PRESSURE
EXTENSION
MANUAL
O-RING

ACROSS

AUTOMATIC TRANSMISSION

ANSWER KEY

```
S E L E C T O R S H A F T . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . B E L L H O U S I N G . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
M A N U A L . . O R I N G . . . . . . . .
M A N U A L L I N K A G E Q U A D R A N T
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . S E R V O . . . . . . . . . . . . . .
D E T E N T . . . . . . . . . . . . . . .
F L U I D P R E S S U R E . . . . . . . .
T R A N S M I S S I O N M O D U L A T O R
. . . . . . . . . . A U T O M A T I C . .
E X T E N S I O N . . . . . . . . . . . .
S H A F T S E A L . . . . . . . . . . . .
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AUTOMATIC TRANSMISSIONS

T I F Y L A S X O P B Z H H J B O D W S
R O C G H S S I Q C K Y N D O A R X C G
A V O U Y D H I Y A U T O M A T I C Y F
N S X F T B Z P H H M O A O P B N D R U
S H V L S E R V O O N I S D V W G E X C
M A N U A L L I N K A G E U Q O R T F R
I F D I M L P P O K K J L L Z B P E V G
S T X D R H F S J M I X E A O H E N O Y
S S D P C O R L F T B X C T U F X T B O
I E F R C U Y C P T N B T O V K T R R F
O A L E A S U F U H B Z O R L R E X G P
N L N S Z I Q G Q U A D R A N T N R R C
V O Z S D N Y G P I B V S S Q K S V U M
Q H Z U G G F W H D M R H U F F I M H T
L A R R A Y S K L O H S A X X W O J W X
Z M A E Y V Z X N H K I F B X P N E Q Y
A R M Y F I N T I H A D T W N U E S Y X

Can you find these words?

SELECTOR SHAFT
TRANSMISSION
SHAFT SEAL
AUTOMATIC
DETENT
MANUAL LINKAGE
BELL HOUSING
MODULATOR
QUADRANT
SERVO
FLUID PRESSURE
EXTENSION
MANUAL
O-RING

ACROSS/DOWN

AUTOMATIC TRANSMISSIONS

ANSWER KEY

```
T . . . . . . . . . . . . . . . O . . .
R . . . . . . . . . . . . . . . R . . .
A . . . . . . . . A U T O M A T I C . .
N S . F . B . . . . . . . O . . N D . .
  H . L S E R V O . . . S D . . G E . .
M A N U A L L I N K A G E U . . . T . .
I F . I . I . . . . . . L L . . . E . .
S T . D . H . . . . . . E A . . E N . .
S S . P . O . . . . . . C T . . X T . .
I E . R . U . . . . . . T O . . T . . .
O A . E . S . . . . . . O R . . E . . .
N L . S . I . . Q U A D R A N T N . . .
. . . S . N . . . . . . S . . . S . . .
. . . U . G . . . . . . H . . . I . . .
. . . R . . . . . . . . A . . . O . . .
. . . E . . . . . . . . F . . . N . . .
. . . . . . . . . . . . T . . . . . . .
```

AUTOMATIC TRANSMISSIONS

E	I	E	E	S	V	D	X	J	M	N	B	Q	T	F	Z	L	C	U	N	C
E	Q	P	F	J	X	Y	S	G	B	R	L	E	C	Z	L	T	Y	O	C	P
A	F	K	A	L	Y	E	N	A	I	K	P	M	H	Y	Z	F	I	I	T	L
T	Q	O	E	N	W	I	D	P	B	N	O	Q	U	U	W	S	D	E	P	B
V	M	E	Y	T	R	A	N	S	M	I	S	S	I	O	N	Q	E	H	B	K
Z	O	N	U	O	L	I	F	J	A	G	F	B	V	E	F	G	B	Q	B	T
S	D	I	O	A	I	X	L	L	N	K	G	U	T	K	Q	V	V	U	F	S
Y	U	W	U	I	A	V	N	I	U	U	M	X	K	N	D	R	C	A	E	F
Q	L	N	I	H	U	Y	S	G	A	I	E	Q	P	M	S	C	H	D	A	V
C	A	I	O	C	T	U	O	G	L	H	D	H	N	V	G	S	T	R	K	G
M	T	Y	S	D	O	R	F	U	L	G	D	P	K	B	R	T	Y	A	H	X
I	O	Z	B	H	M	L	X	F	I	A	T	R	R	O	B	J	F	N	Q	O
C	R	U	L	B	A	N	F	I	N	T	M	E	T	E	G	R	S	T	Y	U
S	C	L	R	O	T	F	Z	A	K	R	I	C	T	Q	S	S	V	J	H	L
S	E	R	V	O	I	B	T	Y	A	G	E	P	Y	U	J	S	T	H	L	T
B	E	C	W	S	C	U	R	S	G	L	T	J	T	Z	Q	Q	U	E	Z	E
V	G	O	S	E	Y	Q	B	D	E	T	E	N	T	N	L	Q	J	R	O	D
N	W	M	V	P	M	S	C	S	H	A	T	Y	A	W	G	Z	W	O	E	V
Z	V	P	M	D	C	M	A	H	E	S	L	T	I	X	J	Q	G	D	I	B

Can you find these words?

SELECTOR SHAFT
TRANSMISSION
SHAFT SEAL
AUTOMATIC
DETENT

MANUAL LINKAGE
BELL HOUSING
MODULATOR
QUADRANT
SERVO

FLUID PRESSURE
EXTENSION
MANUAL
O-RING

ACROSS/DOWN/DIAGONAL

AUTOMATIC TRANSMISSIONS

ANSWER KEY

```
. . . . . . . . . . . . . . . . . . . N .
. . . . . . . . G . . . . . . . . . O . .
. . . . . . . N . . . . . . . . . I . . .
. . . . . . I . . . . . . . . . S . . . .
. M . . T R A N S M I S S I O N . . . . .
. O . . O L . F . A G . . . E . . . Q . T
. D . . A . . . L N . . . T . . . . U F .
. U . U . A . . I U . . X . . . . . A . .
. L N . . U . S . A I E . . . . . H D . .
. A . . . T U . . L . D . . . . S . R . .
M T . S . O . . . L . . P . . R . . A . .
. O . . H M . . . I . . . R O . . . N . .
. R . L . A . . . N . . . T E . . . T . .
. . L . . T F . . K . . C . . S . . . . .
S E R V O I . T . A . E . . . . S . . . .
B . . . . C . . S G L . . . . . . U . . .
. . . . . . . . D E T E N T . . . . R . .
. . . . . . . . S . A . . . . . . . . E .
. . . . . . . . . . . L . . . . . . . . .
```

AUTOMATIC TRANSMISSIONS I

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	2	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	3	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	4	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	5													XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

5. rods that can be moved to select gear ratios or speed (2 words)

DOWN:

2. a short name for transmissionextension
3. the letters & numbers on the dashboard that show the gear positions
4. a device used to push or pull another part

AUTOMATIC TRANSMISSIONS I

ANSWER KEY

ACROSS:

5. MANUALLINKAGE

DOWN:

2. EXTENSION
3. QUADRANT
4. SERVO

		E										
		X										
		T		Q								
		E		U								S
M	A	N	U	A	L	L	I	N	K	A	G	E
		S		D								R
		I		R								V
		O		A								O
		N		N								
				T								

AUTOMATIC TRANSMISSION II

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	2	XX XX	XX XX	3	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	4											XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	5					XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

4. housing that joins the transmission and engine (2 words)
5. a seal for liquids that is made from plastic that is like rubber (-)

DOWN:

1. device used to fit into a notched wheel that prevents movement
2. force caused by the hydraulic fluid (2 words)
3. a unit that controls pressure

AM-22-20

AUTOMATIC TRANSMISSION II

ANSWER KEY

ACROSS:	DOWN:
4. BELLHOUSING	1. DETENT
5. ORING	2. FLUIDPRESSURE
	3. MODULATOR

```
                  D

                  E

                  T

    F     M       E

B E L L H O U S I N G

    U     D       T

    I     U

    D     L

    P     A

    R     T

    E     O R I N G

    S     R

    S

    U

    R

    E
```

LEARNING WORDS USED IN INSPECTING BRAKE PERFORMANCE

INTRODUCTION

The auto mechanic must remember that every time the brake pedal is depressed, the lives of many people depend on his knowledge and skill. The brakes must work correctly each time they are used. The auto mechanic must make each brake inspection a thorough one and perform all service and repair with care and to the hignest standards. The mechanic must refuse to perform any "half-way" jobs since, in effect, persons lives are in the mechanic's hands. In this unit you will learn the technical vocabulary related to inspecting brake performance.

PERFORMANCE OBJECTIVES

You will match 19 words used in inspecting brake performance with their definitions. Your teacher will provide a list of words and definitions. You should match at least 15 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.

2. COVER **only** the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER **all** rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definitoin as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

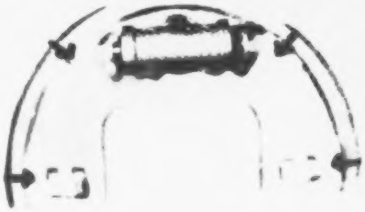
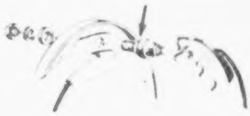
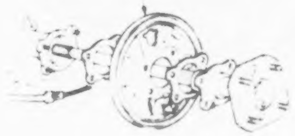
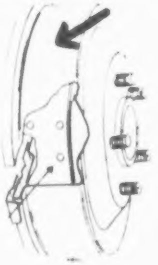
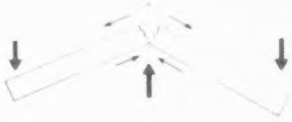
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

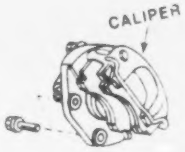
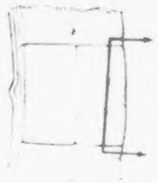
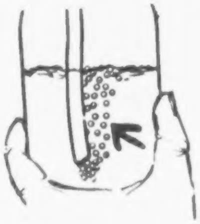
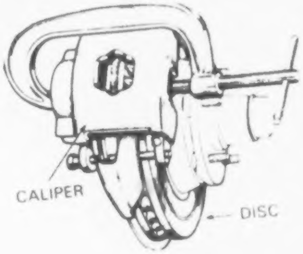
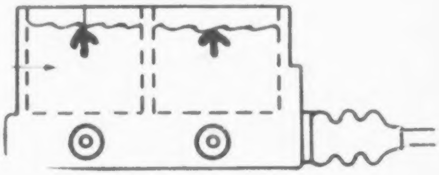
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

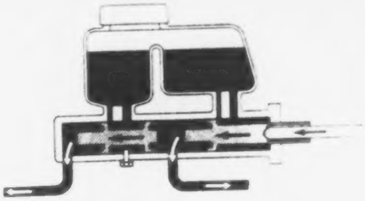
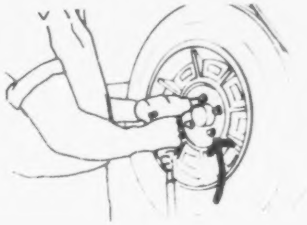
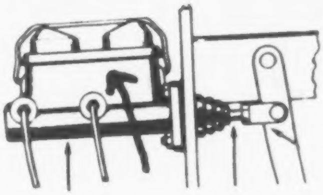
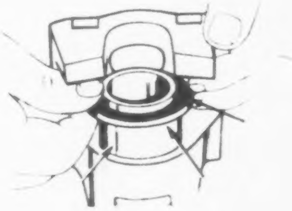
INSPECTING BRAKE PERFORMANCE

abutments (a but ments)	places where parts are next to each other or contact	
anchor pin (an chor pin)	a steel pin used to hold brake shoes in place	
backing plate (back ing plate)	a steel plate that holds brake shoes, cylinders and other brake mechanism	
brake drum (brake drum)	fastens to the wheel and rubs the brake shoes to stop the vehicle	
brittleness (brit tle ness)	being easy to break	

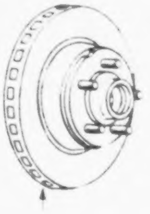
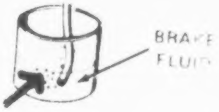
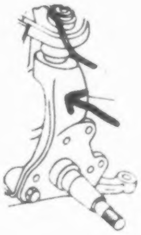
INSPECTING BRAKE PERFORMANCE

caliper (cal i per)	contains a hydraulic (hy draul ic) brake piston and squeezes lining against rotor	
chafe (chafe)	to wear away by rubbing	
contaminant (con tam i nant)	something that dirties fluids	
disc brakes (disc brakes)	1. a plate that turns with the wheel 2. a pad presses against the plate to slow a vehicle	
equalize (e qual ize)	to make the same	

INSPECTING BRAKE PERFORMANCE

hydraulic brake (hy drau lic brake)	brakes that use fluid to transfer pressure	
lug nut (lug nut)	holds the wheel on a vehicle	
master cylinder (mas ter) cylinder (cyl in der)	contains a piston and is connected to the brake pedal in the hydraulic (hy draul ic) brake system	
OSHA (OSHA)	Occupational Safery and Health Administration	ALWAYS BE CAREFUL
piston (pis ton) dust boots (dust boots)	a plastic, that is like rubber, which protects the piston of a caliper (cal i per) from dirt	

INSPECTING BRAKE PERFORMANCE

rotor (ro tor)	turning part of a disc brake that is fastened to the wheel	
sediment (sed i ment)	the small particles that sink to the bottom of a liquid	
steering (steer ing) knuckle (knuck le)	a part of the steering that joins the tie rod ends	
tire pressure (tire pres sure) gauge (gauge)	a tool that measures the air pressure (pres sure) in tires	

BRAKE PERFORMANCE

S T E E R I N G K N U C K L E W C H A F E

A N C H O R P I N W Q B P A Q P T W P Y M

B A C K I N G P L A T E H X S Z Q B B U J

J O B M O A H J F I S P Q T C F E N G E C

C O N T A M I N A N T S E D I M E N T T R

G R V R O Q U B R A K E D R U M D R I H I

M F F Z X M D V J G R I H X F B A W W H I

H Y D R A U L I C B R A K E Q Z H K R O M

P R E S S U R E G A U G E I S H A D T H P

O T Y M Q J R T H P N E L I A Z T M X V S

B R I T T L E N E S S E Q U A L I Z E N E

F P I S T O N D U S T B O O T S R O T O R

C A L I P E R N Y D A A B M I R M Q D Y V

M J S Z F S N X M N D W L I A U B Q K F K

I C I S E O F P E W W I E R L U G N U T P

A B U T M E N T S Y G X A I M R I X U H A

I S C O D I E L W I R X K V H X Q M L Z A

M A S T E R C Y L I N D E R E U T G R W X

F S X F T T X Y D I S C B R A K E S L P I

Can you find these words?

STEERING KNUCKLE
HYDRAULIC BRAKE
BACKING PLATE
ANCHOR PIN
EQUALIZE
ROTOR

PISTON DUST BOOTS
PRESSURE GAUGE
CONTAMINANT
DISC BRAKES
ABUTMENTS
CALIPER

MASTER CYLINDER
BRITTLENESS
BRAKE DRUM
SEDIMENT
LUG NUT
CHAFE

ACROSS

BRAKE PERFORMANCE

ANSWER KEY

```
S T E E R I N G K N U C K L E . C H A F E
A N C H O R P I N . . . . . . . . . . . .
B A C K I N G P L A T E . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
C O N T A M I N A N T S E D I M E N T . .
. . . . . . . B R A K E D R U M . . . . .
. . . . . . . . . . . . . . . . . . . . .
H Y D R A U L I C B R A K E . . . . . . .
P R E S S U R E G A U G E . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
B R I T T L E N E S S E Q U A L I Z E . .
. P I S T O N D U S T B O O T S R O T O R
C A L I P E R . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . L U G N U T .
A B U T M E N T S . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
M A S T E R C Y L I N D E R . . . . . . .
. . . . . . . . D I S C B R A K E S . . .
```

AM-23-15

BRAKE PERFORMANCE

A I H O D F N D I T J J N V M V Y L T C Z

A E U H P D K D S N C L N E Q U A L I Z E

B A C K I N G P L A T E B R A K E D R U M

U K Q J S T E E R I N G K N U C K L E D N

T M A S T E R C Y L I N D E R U P C I Y D

M L I I O Q E O P Z R F D C Q H E S I G B

E Y O N N P X G V I D I S C B R A K E S C

N W H Y D R A U L I C B R A K E V L I K U

T D I J U E N I G G O T C H A F E R Q G S

S B E D S S C J T C N U A Z A O K V Q S Y

R I E B T S H B R I T T L E N E S S I H J

D M L G B U O X P S A P I C N Q V H W N O

O R E C O R R G F H M I P V G N M L J J H

A Y Z L O E P W E A I R E T R T W F F S F

O Y I F T G I V M U N P R O T O R A Y N W

G S F D S A N V I A A K K X A A W V C H Y

N Z L G L U G N U T N E T K K A U V G N N

T O E O Q G M O R K T K F K Z C L F U M A

Z K X B S E D I M E N T J F U C B H B V Y

Can you find these words?

STEERING KNUCKLE
HYDRAULIC BRAKE
BACKING PLATE
ANCHOR PIN
EQUALIZE
ROTOR

PISTON DUST BOOTS
PRESSURE GAUGE
CONTAMINANT
DISC BRAKES
ABUTMENTS
CALIPER

MASTER CYLINDER
BRITTLENESS
BRAKE DRUM
SEDIMENT
LUG NUT
CHAFE

ACROSS/DOWN

BRAKE PERFORMANCE

ANSWER KEY

```
. . . . . . . . . . . . . . . . . . . . .
A . . . P . . . . . . . . E Q U A L I Z E
B A C K I N G P L A T E B R A K E D R U M
U . . . S T E E R I N G K N U C K L E . .
T M A S T E R C Y L I N D E R . . . . . .
M . . . O . . . . . . . . . . . . . . . .
E . . . N P . . . . D I S C B R A K E S .
N . H Y D R A U L I C B R A K E . . . . .
T . . . U E N . . . O . C H A F E . . . .
S . . . S S C . . . N . A . . . . . . . .
. . . . T S H B R I T T L E N E S S . . .
. . . . B U O . . . A . I . . . . . . . .
. . . . O R R . . . M . P . . . . . . . .
. . . . O E P . . . I . E . . . . . . . .
. . . . T G I . . . N . R O T O R . . . .
. . . . S A N . . . A . . . . . . . . . .
. . . . L U G N U T N . . . . . . . . . .
. . . . . G . . . . T . . . . . . . . . .
. . . . S E D I M E N T . . . . . . . . .
```

BRAKE PERFORMANCE

```
I S E D P I S E E I Y W A W N N K V I V C
B G N U R E A B U I Y G O C A L I P E R Y
B V P A E H I A U A Z B N O R M S C O T A
N H F G S E A C B C C C I N Q P T T E M U
V D Y I S E M K I U T V H T R J O L U Q S
Q D Z D U Q S I F E T Y T A A R K R W S R
M X O B R U A N M A R M B M F C D C E Z K
O I X X E A U G K L S I E I U E O N V T C
L D C E G L U P B E Q A I N K Z E V F J D
Z H F P A I X L K I M M K A T L K V T L X
X K U F U Z F A I S K G R N T S Z Q L P A
P N P C G E R T K C N B D T Y I T B U F L
V P H C E B Q E Q I B L I V V F J Q K L U
V M W C C F A C R T J R B N B G L K H N G
S C W S Z F A E R L B K A N C H O R P I N
I A I O X S E D I M E N T K O X G I G P U
W D M A S T E R C Y L I N D E R X O H X T
V A P I S T O N D U S T B O O T S F N Y P
```

Can you find these words?

STEERING KNUCKLE
HYDRAULIC BRAKE
BACKING PLATE
ANCHOR PIN
EQUALIZE
ROTOR
PISTON DUST BOOTS
PRESSURE GAUGE
CONTAMINANT
DISC BRAKES
ABUTMENTS
CALIPER
MASTER CYLINDER
BRITTLENESS
BRAKE DRUM
SEDIMENT
LUG NUT
CHAFE

ACROSS/DOWN/DIAGONAL

BRAKE PERFORMANCE

ANSWER KEY

```
. . . . P . . . . . . . . . . . . . . . .
. . . . R . . B . . . . . C A L I P E R .
. . . . E . . A . . . . . O . . . . O . .
. H . . S . . C B . . C . N . . . T E M .
. . Y . S E . K . U . . H T . . O L U . S
. . . D U Q . I . . T . . A . R K R . S .
. . . . R U . N . . . M . M F C D . E . .
. . . . E A . G . . S . E I U E . N . . .
. . . . G L U P . E . . . N K . E . . . .
. . . . A I . L K . . . K A T L . . . . .
. . . . U Z . A I . . G R N T S . . . . .
. . . . G E R T . C N B . T . . . . . . L
. . . . E B . E . I B . I . . . . . . . U
. . . . C . . . R . . R . . . . . . . . G
. . . S . . . E . . B . A N C H O R P I N
. . I . . S E D I M E N T K . . . . . . U
. D M A S T E R C Y L I N D E R . . . . T
. . P I S T O N D U S T B O O T S . . . .
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BRAKE PERFORMANCE I

XX XX	XX XX	XX XX	XX XX	XX XX	1			2							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	3											XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	4	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	5												XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	6	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	7								XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

1. a plate that turns with the wheel which then slows a vehicle (2 words)
3. being easy to break
5. a steel plate that holds brake shoes (2 words)
7. to make the same

DOWN:

2. something that dirties fluids
3. a metal tube that fastens to wheel and covers the brake shoes (2 words)
4. a steel pin used to hold something in place (2 words)
6. squeezes linings against rotor

BRAKE PERFORMANCE I

ANSWER KEY

ACROSS:		DOWN:	
1.	DISCBRAKES	2.	CONTAMINANT
3.	BRITTLENESS	3.	BRAKEDRUM
5.	BACKINGPLATE	4.	ANCHORPIN
7.	EQUALIZE	6.	CALIPER

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        D I S C B R A K E S
              O
B R I T T L E N E S S
R             T       A
A           B A C K I N G P L A T E
K         C   M       C
E   E Q U A L I Z E   H
D         L   N       O
R         I   A       R
U         P   N       P
M         E   T       I
          R           N
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BRAKE PERFORMANCE II

XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	2	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	3	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	4															XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX	5						XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX	6					XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	7								XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

4. a part of the front suspension that joins the rod ends (2 words)
5. a part that holds the wheel on a vehicle (2 words)
6. turning part of a disc brake
7. the small pieces that sink to the bottom of a liquid

DOWN:

1. main cylinder in the hydraulic brake system that is filled with brake fluid (2 words)
2. brakes that use fluid to transfer pressure (2 words)
3. a seal which protects the piston of a caliper from dirt (3 words)

AM-23-22

BRAKE PERFORMANCE II

ACROSS:

4. STEERINGKNUCKLE
5. LUGNUT
6. ROTOR
7. SEDIMENT

DOWN:

1. MASTERCYLINDER
2. HYDRAULICBRAKE
3. PISTONDUSTBOOTS

```
    M

    A   H

P   S   Y

I   T   D

S T E E R I N G K N U C K L E

T   R   A

O   C   U

N   Y   L U G N U T

D   L   I

U   I   C

S   N   B

T   D   R O T O R

B   E   A

O   R   K

O       E

T

S E D I M E N T
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BRAKE PERFORMANCE III

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	2	XX XX	3	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

DOWN:

1. places where parts are next to each other
2. to wear away by rubbing
3. Occupational Safety and Health Administration (Abbr.)

BRAKE PERFORMANCE III

ANSWER KEY

DOWN:

1. ABUTMENTS
2. CHAFE
3. OSHA

A	C	O
B	H	S
U	A	H
T	F	A
M	E	
E		
N		
T		
S		

LEARNING WORDS USED IN SERVICING HYDRAULIC BRAKE SYSTEM

INTRODUCTION

Steel tubing and rubber hoses are used for much of the automobile's brake system. They form the link between the master cylinder and the wheel cylinders or calipers. They transmit the hydraulic pressure developed by the master cylinder to apply the brakes when the operator steps on the pedal. During the replacement of lines and hoses or during a normal hydraulic system service, air is permitted to enter the brake system. In this unit you will learn the technical vocabulary related to servicing hydraulic brake systems.

PERFORMANCE OBJECTIVES

You will match 6 words used in servicing hydraulic brake systems with their definitions. Your teacher will provide a list of words and definitions. You should match at least 5 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER **only** the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER **all** rows of words, definitions, and pictures except **one**. LOOK AT the word, definition, and picture. LISTEN to the definitoin as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

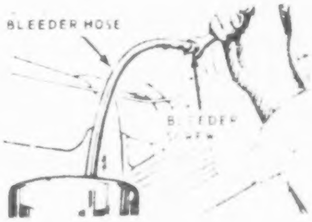
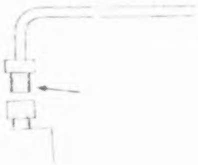
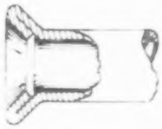
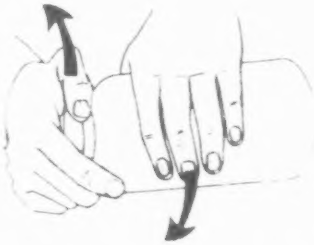
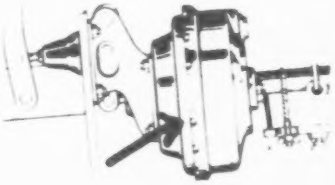
10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

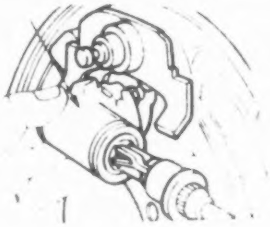
13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

SERVICING HYDRAULIC BRAKE SYSTEM

bleeding (bleed ing) hydraulic brakes (hy drau lic brakes)	removing the air from the hydraulic (hy drau lic) brake system	
disconnect (dis con nect)	to separate	
flare (flare)	to turn out the opening	
manually (man u al ly)	by hand	
power booster (pow er boost er)	a device that increases power to a brake master cylinder (cyl in der)	

SERVICING HYDRAULIC BRAKE SYSTEM

wheel cylinder (wheel cyl in der)	a part that gets pressure from a master cylinder and moves brake shoes against drums



SERVICING HYDRAULIC BRAKE SYSTEM

Word Find Puzzles for Units AM-24, AM-25, AM-26, and AM-27 have been combined into one group of puzzles and may be found on Pages AM-27-3 to AM-27-5.

Crossword Puzzle for Units AM-24, AM-25, and AM-26 has been made into one puzzle which may be found on Page AM-26-3.

LEARNING WORDS USED TO INSPECT AND REPAIR DRUM BRAKE COMPONENTS

INTRODUCTION

The drum brake is one of the two major types of wheel brakes used on modern passenger cars. The wheel brakes are the most important part of a brake system from the standpoint of service because they contain the lined brake shoes that actually stop the vehicle. The drum brakes on the rear of most vehicles also normally include the additional parts required for parking brakes. At regular intervals it becomes necessary to repair or replace some of the brake components in order to maintain safe, controlled braking action. In this unit you will learn the technical vocabulary related to drum brake components.

PERFORMANCE OBJECTIVES

You will match 7 words used in inspecting and repairing drum brake components with their definitions. Your teacher will provide a list of words and definitions. You should match at least 6 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.

2. COVER **only** the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER **all** rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definitoin as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

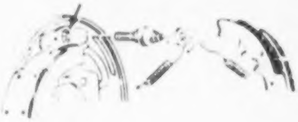
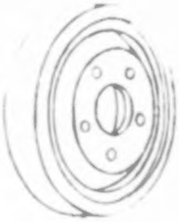
10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

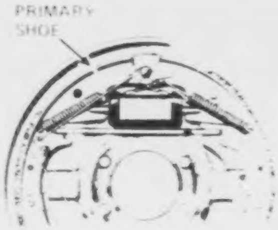
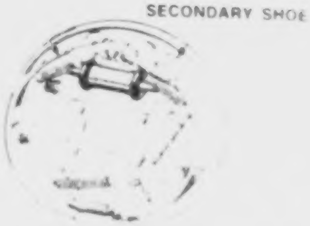
12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

INSPECT AND REPAIR DRUM BRAKE COMPONENT

boss (boss)	a reinforced, heavier area made to give strength to an object	
brake lining (brake lin ing)	material fastened to brake shoes that increase friction and give longer wear	
brake shoes (brake shoes)	a curved metal covered with brake lining that is pressed against the brake drum to slow the wheel	
defective (de fec tive)	does not operate correctly	
drum brake (drum brake)	a round drum surface that turns with the wheel and is rubbed by the brake lining	

INSPECT AND REPAIR DRUM BRAKE COMPONENT

primary (pri ma ry) brake shoe (brake shoe)	a brake shoe facing the front of a car	 PRIMARY SHOE
secondary (sec on dar y) brake shoe (brake shoe)	a brake shoe that faces the rear of the car	 SECONDARY SHOE

INSPECT AND REPAIR DRUM BRAKE COMPONENT

Word Find Puzzles for Units AM-24, AM-25, AM-26, and AM-27 have been combined into one group of puzzles and may be found on Pages AM-27-3 to AM-27-5.

Crossword Puzzles for Units AM-24, AM-25, and AM-26 have been made into one puzzle which may be found on Page AM-26-3.

LEARNING WORDS USED IN REPLACING MASTER AND WHEEL CYLINDER

INTRODUCTION

Some shops do not attempt to overhaul wheel and master cylinders. Instead, they install new or rebuilt cylinders obtained from a parts dealer specializing in this work. Periodically, the wheel or master cylinders must be replaced because of fluid liaks when other brake components do not need this service. In this unit you will learn the technical vocabulary related to replacing master and wheel cylinders.

PERFORMANCE OBJECTIVES

You will match 4 words used in replacing master and wheel cylinders with their definitions. Your teacher will provide a list of words and definitions. You should match all the words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.

2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definitoin as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

CROSSWORD

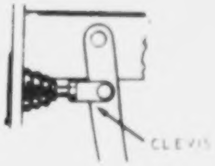
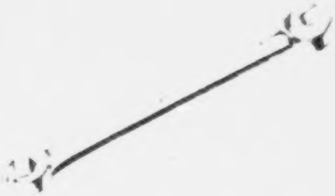
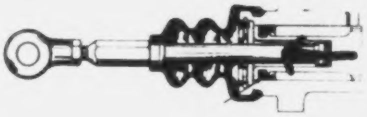
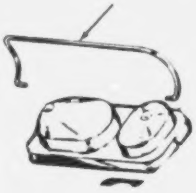
1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

REPLACING MASTER AND WHEEL CYLINDER

clevis (clev is)	a U-shaped metal piece with holes in each end	
flare-nut wrench (flare-nut wrench)	a tool used to turn the nut that holds joints on tubings	
master cylinder (mas ter cyl in der) push rod (push rod)	a metal rod joined to the brake pedal and is pushed into the master cylinder piston	
retaining clip (re tain ing clip)	a wire band used to fasten parts	

REPLACING MASTER AND WHEEL CYLINDERS

Word Find Puzzles for Units AM-24, AM-25, AM-26, and AM-27 have been combined into one group of puzzles and may be found on Pages AM-27-3 to AM-27-5.

BRAKE SYSTEM & CYLINDERS

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	2	3										XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	4										XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	7	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	6	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	8														XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX

ACROSS:

2. material fastened to brake shoes that keeps them from slipping (2 words)
4. curved metal block that is pressed against brake drum to slow the wheel (2 words)
8. a tool to use with the nut that holds joints on tubings (3 words)

DOWN:

1. to separate
3. a metal band to hold parts (2 words)
6. by hand
7. a round drum surface that turns with the wheel (2 words)

BRAKE SYSTEM & CYLINDERS

ANSWER KEY

ACROSS:		DOWN:	
2.	BRAKELINING	1.	DISCONNECT
4.	BRAKESHOES	3.	RETAININGCLIP
8.	FLARENUTWRENCH	6.	MANUALLY
		7.	DRUMBRAKE

```
              D
  B R A K E L I N I N G
    E         S
    T         C
B R A K E S H O E S
    I         N
    N         N     D
    I         E     R
    N         C     U
    G         T     M   M
    C               B   A
  F L A R E N U T W R E N C H
    I               A   U
    P               K   A
                    E   L
                        L
                        Y
```

LEARNING WORDS USED IN INSPECTING AND REPAIRING DISC BRAKE COMPONENTS

INTRODUCTION

The modern automobile brake system generally incorporates disc brakes for the front wheels and drum-type brakes for the rear wheels. One reason for this is that the weight of the vehicle is thrown forward when brakes are applied and approximately 60 percent of the braking action takes place at the front wheels. Superior braking action results with disc brakes. This is why so many vehicles now use this system. In this unit you will learn the technical vocabulary related to disc brake components.

PERFORMANCE OBJECTIVES

You will match 5 words used in inspecting and repairing disc brake components with their definitions. Your teacher will provide a list of words and definitions. You should match all of the words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.

2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definitoin as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

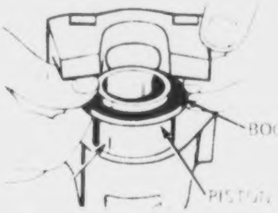
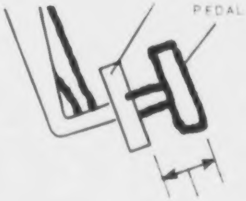
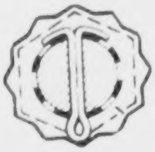
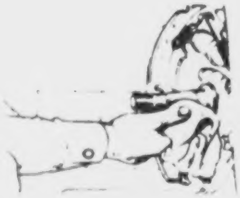
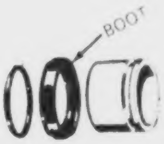
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

INSPECTING AND REPAIRING DISC BRAKE COMPONENTS

assemble (as sem ble)	to put together	
brake fade (brake fade)	brakes become less effective because of increased heat from friction	
cotter pin (cot ter pin)	a split pin used to hold parts from rotating when it is put in place and bent	
crocus cloth (cro cus cloth)	a very fine abrasive cloth used to polish metal parts	
dust boot (dust boot)	a rubber ring that keeps dirt out of the disc brake piston	

BRAKES & CYLINDERS

F L A R E N U T W R E N C H F J U A E I E

R E T A I N I N G C L I P P U S H R O D S

S E C O N D A R Y S H O E Q T C T G J B I

C O T T E R P I N I R S I C R C O I T V M

R I C S M A N J P O W E R B O O S T E R J

B R A K E F A D E F O B G E C F Q H P M P

I S I C E N O S I N D R U M B R A K E S J

V X J S K Q P R I M A R Y S H O E E E M D

D E F E C T I V E B Y C U X G N R G K C V

T I L W H E E L C Y L I N D E R W M K J N

B R A K E L I N I N G B L E E D I N G Q O

A S S E M B L E S Y S P U U A J M A O H X

U I I I B O S S T Q O N I W F P Y J Y Y A

F D I S C O N N E C T B R A K E S H O E S

T R C R O C U S C L O T H F L A R E T Z V

W R C T I V D P R Y K O Y P B M H T Z W W

V F W M A N U A L L Y D U S T B O O T Q A

O D E G F I S D S D H S E J Q K D V F W E

V S K M L Y O B S V C L E V I S Q C Q U D

Can you find these words?

FLARE NUT WRENCH
WHEEL CYLINDER
PRIMARY SHOE
BRAKE SHOES
BRAKE FADE
DEFECTIVE
PUSH RODS
CLEVIS

RETAINING CLIP
POWER BOOSTER
BRAKE LINING
DISCONNECT
DUST BOOT
MANUALLY
BOSS

SECONDARY SHOE
CROCUS CLOTH
COTTER PIN
DRUM BRAKE
ASSEMBLE
BLEEDING
FLARE

ACROSS

BRAKES & CYLINDERS

ANSWER KEY

F L A R E N U T W R E N C H . . . .
R E T A I N I N G C L I P P U S H R O D S
S E C O N D A R Y S H O E . . . .
C O T T E R P I N . . . .
. . . . P O W E R B O O S T E R .
B R A K E F A D E . . . .
. . . . D R U M B R A K E . .
. . . . . . P R I M A R Y S H O E . . . .
D E F E C T I V E . . . .
. . . W H E E L C Y L I N D E R . . . . .
B R A K E L I N I N G B L E E D I N G . .
A S S E M B L E . . . .
. . . . B O S S . . . .
. D I S C O N N E C T B R A K E S H O E S
. . C R O C U S C L O T H F L A R E . . .
. . . .
. . . M A N U A L L Y D U S T B O O T . .
. . . .
. . . . C L E V I S . . . . .

BRAKES & CYLINDERS

O G N E Y P O W E R B O O S T E R G R J V

D B I V D M M H U W F D B A K B Y J V G R

E U E B R A K E L I N I N G W J V S P N X

G P W M U D X E T M U F Q E E L W G J O W

K E M A M U R L K A U L N K L C Q W L W M

B O S S B S E C O N D A R Y S H O E L T S

S S I D R T T Y L U U R T K V Y H S I A R

Q N I Y A B A L Q A E E S B P C M G E L O

G P W A K O I I C L G N B L U L M X D X B

K R Q Q E O N N J L R U R E S E I C O W R

I I Q C D T I D S Y N T A E H V K D B T A

W M Q U J W N E P E T W K D R I R N K F K

T A I N D F G R H W M R E I O S U B Y M E

C R O C U S C L O T H E S N D O K F R Y F

C Y Y U B V L B J X R N H G S F X J H W A

E S P T O I I Y D I S C O N N E C T E N D

U H U Y D B P V Y A Q H E G S Y E L C I E

C O T T E R P I N K U A S S E M B L E M H

D E F E C T I V E G V C Q J L V V L H Z T

Can you find these words?

FLARE NUT WRENCH
WHEEL CYLINDER
PRIMARY SHOE
BRAKE SHOES
BRAKE FADE
DEFECTIVE
PUSH RODS
CLEVIS

RETAINING CUP
POWER BOOSTER
BRAKE LINING
DISCONNECT
DUST BOOT
MANUALLY
BOSS

SECONDARY SHOE
CROCUS CLOTH
COTTER PIN
DRUM BRAKE
ASSEMBLE
BLEEDING
FLARE

ACROSS/DOWN

BRAKES & CYLINDERS

ANSWER KEY

```
. . . . . P O W E R B O O S T E R . . . .
. . . . D . . H . . . . . . . . . . . . .
. . . B R A K E L I N I N G . . . . . . .
. . . . U D . E . M . F . . . . . . . . .
. . . . M U R L . A . L . . . . . . . . .
B O S S B S E C O N D A R Y S H O E . . .
. . . . R T T Y . U . R . . . . . . . . .
. . . . A B A L . A . E . B P C . . . . .
. P . . K O I I . L . N B L U L . . . . B
. R . . E O N N . L . U R E S E . . . . R
. I . . . T I D . Y . T A E H V . . . . A
. M . . . . N E . . . W K D R I . . . . K
. A . . . . G R . . . R E I O S . . . . E
C R O C U S C L O T H E S N D . . . . . F
. Y . . . . L . . . . N H G S . . . . . A
. S . . . . I . D I S C O N N E C T . . D
. H . . . . P . . . . H E . . . . . . . E
C O T T E R P I N . . A S S E M B L E . .
D E F E C T I V E . . . . . . . . . . . .
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BRAKES & CYLINDERS

A	G	Q	H	I	K	Y	O	E	B	V	U	Q	G	V	P	S	B	P	B	H
O	J	I	E	K	D	F	Y	W	I	X	M	S	C	L	F	I	E	U	I	B
P	R	I	M	A	R	Y	S	H	O	E	Q	M	K	Z	Z	L	G	S	I	N
S	D	I	S	C	O	N	N	E	C	T	G	A	L	P	G	F	A	H	Y	X
Z	H	I	R	B	R	A	K	E	S	H	O	E	S	R	T	H	C	R	W	D
T	L	U	N	R	W	C	B	L	N	W	P	N	P	O	Y	N	E	O	E	M
Q	P	H	Z	A	C	W	X	C	O	C	V	U	O	N	E	I	G	D	F	B
B	O	A	G	K	A	K	R	Y	J	F	L	B	B	R	I	Q	U	S	D	H
O	W	P	C	E	C	D	D	L	T	X	T	E	W	O	H	F	V	B	E	Q
D	E	T	R	F	W	N	R	I	N	S	I	T	V	R	S	D	B	R	F	L
M	R	O	O	A	Z	K	U	N	U	U	U	I	Q	I	Y	S	S	A	E	K
M	B	I	C	D	D	A	M	D	E	N	I	C	J	T	S	U	R	K	C	M
E	O	G	U	E	H	D	B	E	E	S	A	S	S	E	M	B	L	E	T	U
P	O	Y	S	C	F	T	R	R	E	T	A	I	N	I	N	G	C	L	I	P
K	S	E	C	O	N	D	A	R	Y	S	H	O	E	K	C	M	Y	I	V	K
W	T	T	L	N	Q	L	K	L	I	S	I	C	O	E	N	S	I	N	E	L
K	E	G	O	I	F	Q	E	A	S	G	C	O	T	T	E	R	P	I	N	W
M	R	I	T	Y	Q	Y	T	K	F	C	O	B	L	E	E	D	I	N	G	P
I	H	P	H	D	N	O	I	D	M	A	N	U	A	L	L	Y	N	G	G	F

Can you find these words?

FLARE NUT WRENCH
WHEEL CYLINDER
PRIMARY SHOE
BRAKE SHOES
BRAKE FADE
DEFECTIVE
PUSH RODS
CLEVIS

RETAINING CLIP
POWER BOOSTER
BRAKE LINING
DISCONNECT
DUST BOOT
MANUALLY
BOSS

SECONDARY SHOE
CROCUS CLOTH
COTTER PIN
DRUM BRAKE
ASSEMBLE
BLEEDING
FLARE

ACROSS/DOWN/DIAGONAL

BRAKES & CYLINDERS

ANSWER KEY

```
. . . . . . . . . . . . . . . . . . P . .
. . . . . . . . W . . . . . . F . . U . .
P R I M A R Y S H O E . . . . . L . S . .
. D I S C O N N E C T . . . . . . A H . .
. . . . B R A K E S H O E S . T . C R . .
. . . . R . . . L . . . . . O . N . O E .
. P . . A . . . C . C . . O . E . . D . .
. O . . K . . . Y . . L B B R . . . S D .
. W . C E . . D L . . T E W O . . . B E .
. E . R F . . R I . S . T V . S . . R F .
. R . O A . . U N U . U . . I . S . A E .
. B . C D . . M D . N . . . . S . . K C .
. O . U E . . B E E . A S S E M B L E T .
. O . S . . . R R E T A I N I N G C L I P
. S E C O N D A R Y S H O E . . . . I V .
. T . L . . L K . . . . . . . . . . . E .
. E . O . F . E . . . C O T T E R P I N .
. R . T . . . . . . . . B L E E D I N G .
. . . H . . . . . M A N U A L L Y . G . .
```

BRAKES & CYLINDERS I

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1									XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	3								XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	4						XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	5								XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

1. a metal strip with ends that can turn outward after it is put into something (2 words)
3. a metal rod joined to the brake pedal that is pushed into the master cylinder (2 words)
4. a U-shaped metal piece with holes in each end
5. a rubber ring that keeps dirt out of the disc brake piston (2 words)

DOWN:

1. a very fine cloth used to polish (2 words)

AM-27-14

BRAKES & CYLINDERS I

ANSWER KEY

ACROSS:

1. COTTERPIN
3. PUSHRODS
4. CLEVIS
5. DUSTBOOT

DOWN:

1. CROCUSCLOTH

```
          C O T T E R P I N

          R

          O

          C

        P U S H R O D S

          S

          C L E V I S

          L

D U S T B O O T

          T

          H
```

BRAKES & CYLINDERS II

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	2							3		XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	4								XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	5					XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. the brakes not working well because of increased heat (2 words)
4. to put together
5. to turn out on the open end

DOWN:

1. part that gets pressure from master cylinder & puts brake shoes to the drums (2 words)
2. a larger area made to give strength to an object
3. something wrong with a part

BRAKES & CYLINDERS II

ANSWER KEY

ACROSS:		DOWN:	
2.	BRAKEFADE	1.	WHEELCYLINDER
4.	ASSEMBLE	2.	BOSS
5.	FLARE	3.	DEFECTIVE

```
            W
            H
    B R A K E F A D E
    O       E     E
A S S E M B L E   F
    S       C     E
            Y     C
            L     T
            I     I
            N     V
            D     E
    F L A R E
            R
```

LEARNING WORDS USED IN REPLACING SHOCK ABSORBERS

INTRODUCTION

Absorbing shock is primarily a function of the springs that attach the suspension to the frame or chassis of the car. The shock absorbers control the bounce action of the springs in order to produce a smooth, controlled and safe ride. In this unit you will learn the technical vocabulary related to replacing shock absorbers.

PERFORMANCE OBJECTIVES

You will match 10 words used in replacing shock absorbers with their definitions. Your teacher will provide a list of words and definitions. You should match at least 8 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.

2. COVER **only** the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER **all** rows of words, definitions, and pictures except **one**. LOOK AT the word, definition, and picture. LISTEN to the definitoin as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

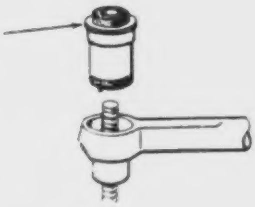
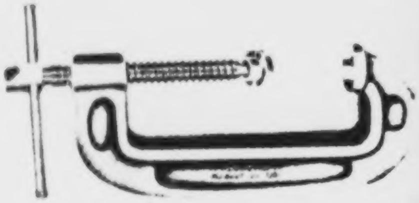
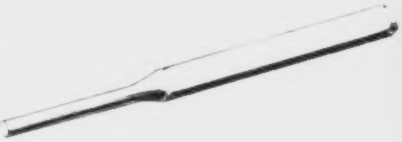
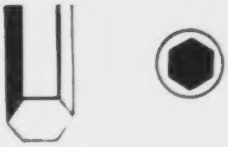
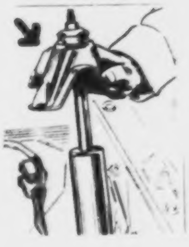
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

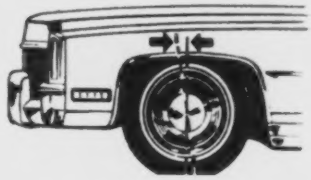
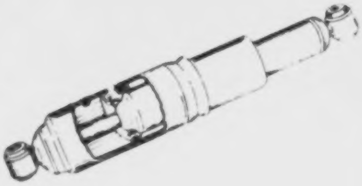
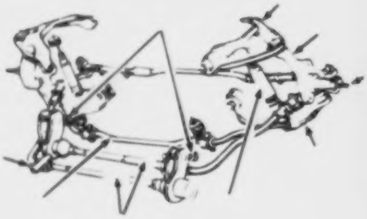
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

REPLACING SHOCK ABSORBERS

bushing (bush ing)	a soft, porous, one-piece bearing for a shaft	
C-clamp (C-clamp)	a metal tool shaped like a C that holds an object	
drift pin punch (drift pin punch)	a long, tapered tool used to take out a drift pin	
hex (hex)	an object or an opening that has six sides	
mounts (mounts)	parts on which the shock absorber fastens	

REPLACING SHOCK ABSORBERS

oscillation (os cil la tion)	to swing or move back and forth in a steady motion	
shock absorber (shock ab sorb er)	a device that softens sudden shocks to the suspension	
sleeve (sleeve)	a machine part that is like a tube and fits over another	
suspension (sus pen sion)	springs and other supporting parts that give the vehicle a smooth ride	
vertical (ver ti cal)	straight up from bottom to top	

SHOCK ABSORBERS

S H O C K A B S O R B E R Z T N V W H T E
P H I W E C A Z Y V H G I E J O N U L C L
A A T W E Q D E R E I Y M L W V S N Q H N
Q D T D V T F I Q N B D O V E R T I C L E
B R D N N O C Y B H E X Z I D T J K H H O
T S V N X H B S B T K S Z A V U H K M V J
L S O E H V T Y Y A J F H A B I P F E J M
F K P P C K M V W I J H D Z N K A W R R V
Y C P U Y P W S P G F K N Y J H K P C K N
M L C Y Q M J V Q D I B F B R S H F P J L
Y J Y Q Z C X X S L E E V E T W V M D X X
U W C C L A M P X P M U I D C P W W J N O
C L R O R R T U N P S H J F W J M W O O A
D R I F T P I N P U N C H N S Z V U C F U
P L P M S K H K D S K B K O L C H J B F L
O S C I L L A T I O N M O U N T S Z M L Z
X S R C M N W I L W X S N U Q E Y Q J C B
S P V C S L X B I B U S H I N G L T T O B

Can you find these words?

SHOCK ABSORBER
VERTICLE
MOUNTS
DRIFT PIN PUNCH
BUSHING
C-CLAMP
OSCILLATION
SLEEVE
HEX

ACROSS

SHOCK ABSORBERS

ANSWER KEY

```
S H O C K A B S O R B E R . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . V E R T I C L E
. . . . . . . . . H E X . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . S L E E V E . . . . . . .
. . C C L A M P . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
D R I F T P I N P U N C H . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
O S C I L L A T I O N M O U N T S . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . B U S H I N G . . . . .
```

SHOCK ABSORBERS

I A X I M Z P S L E D R S S Z P Y
K M E R O N Q Y A N L Z R N Z R P
N T X P U L Z T L T N F E N A A P
E N B X N J A W B P B U S H I N G
D R I F T P I N P U N C H A C B L
L P V O S C I L L A T I O N Q R P
Z F I G L Z K V E R T I C L E F W
M R P H E X D U U V N O K W N E A
E P J Q E T L S F C C L A M P C U
Q K Y M V M J I H L L V B Y H G Z
Y F A W E O F M U Z G U S X S J N
P X G R I O M W X Q X K O W U R K
B Y T Q Y P P I C H U V R L L N S
W Q U P E K U R K M K C B N Q N P
N Q Q A R B I B A E H V E G M G E
I E X G C S S H H H U M R C M N W

Can you find these words?

SHOCK ABSORBER
VERTICLE
MOUNTS
DRIFT PIN PUNCH
BUSHING
C-CLAMP
OSCILLATION
SLEEVE
HEX

ACROSS/DOWN

SHOCK ABSORBERS

ANSWER KEY

```
. . . . M . . . . . . . . . . . .
. . . . O . . . . . . . . . . . .
. . . . U . . . . . . . . . . . .
. . . . N . . . . . B U S H I N G
D R I F T P I N P U N C H . . . .
. . . O S C I L L A T I O N . . .
. . . . L . . V E R T I C L E . .
. . . H E X . . . . . . K . . . .
. . . . E . . . . C C L A M P . .
. . . . V . . . . . . . B . . . .
. . . . E . . . . . . . S . . . .
. . . . . . . . . . . . O . . . .
. . . . . . . . . . . . R . . . .
. . . . . . . . . . . . B . . . .
. . . . . . . . . . . . E . . . .
. . . . . . . . . . . . R . . . .
```

SHOCK ABSORBERS

C C L A M P H D Y H Y K C B T J O N D

G C Z K O A A R E R Y H F O I C X M M

W S H B U S H I N G K G A I H O H T W

Z N V D N I M F I C R Q X P K N F H F

Y G M O T K D T I V E Q D O O W J D Z

O Q X B S F Y P V E T Q G I R F Z Q G

W A R X N Y M I V P H S T K C N A B C

A U F N K M K N V Z A A T X B W Y F J

B H Q D N W W P B H L T U A W L O C I

C R Z I H R B U Y L V M O K O G Q T C

G J R P T U H N I Q O E O D R P T L Q

L A A N C P C C O O L M U F G Y M L R

M I O Y B X S H O C K A B S O R B E R

Z M X O N O P L I X A T L E G G Q V Y

W I D M Y R L T E V I U D X J U P U T

U D J S N C R H Q E H D Z J H D Z V K

P Y Z R H E V B Q C V I J K T W K U N

Q J Z P V U U R E X V E L M P N C G W

Can you find these words?

SHOCK ABSORBER
VERTICLE
MOUNTS
DRIFT PIN PUNCH
BUSHING
C-CLAMP
OSCILLATION
SLEEVE
HEX

ACROSS/DOWN/DIAGONAL

SHOCK ABSORBERS

ANSWER KEY

```
C C L A M P . D . . . . . . . . . . .
. . . . O . . R . . . . . . . . . . .
. . . B U S H I N G . . . . . . . . .
. . . . N . . F . . . . . . . N . . .
. . . . T . . T . . . . . . O . . . .
. . . . S . . P . . . . . I . . . . .
. . . . . . . I . . . . T . . . . . .
. . . . . . . N . . . A . . . . . . .
. . . . . . . P . . L . . . . . . . .
. . . . . . . U . L . . . . . . . . .
. . . . . . . N I . . E . . . . . . .
. . . . . . . C . . L . . . . . . . .
. . . . . . S H O C K A B S O R B E R
. . . . . O . L I X . . . . . . . . .
. . . . . . . T E . . . . . . . . . .
. . . . . . R H . E . . . . . . . . .
. . . . . E . . . . V . . . . . . . .
. . . . V . . . . . . E . . . . . . .
```

SHOCK ABSORBERS I

XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX	2	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX	3						XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	4	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	5													XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	6								XX XX	XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	7			XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

3. a metal tool shaped like a C that holds an object to a table (-)
5. a device that softens sudden shocks (2 words)
6. straight up from bottom to top
7. an object or an opening that has six sides

DOWN:

1. a tool used to take out a drift pin (3 words)
2. to swing or move back and forth
4. a machine part that is like a tube and fits over another part

SHOCK ABSORBERS I

ANSWER KEY

ACROSS:		DOWN:	
3.	CCLAMP	1.	DRIFTPINPUNCH
5.	SHOCKABSORBERS	2.	OSCILLATION
6.	VERTICLE	4.	SLEEVE
7.	HEX		

```
  D
  R
  I
  F
  T
  P
  I       O
  N       S
  P       C C L A M P
  U       I
  N       L           S
  C       L           L
S H O C K A B S O R B E R
          T           E
  V E R T I C L E     V
          O         H E X
          N
```

SHOCK ABSORBERS II

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1				2		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	3	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	4							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	5			XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

1. a machine part that is like a tube and fits over another part
4. a one-piece bearing for a shaft
5. an object or opening that has six sides

DOWN:

2. straight up from bottom to top
3. parts that hold the shock absorber

SHOCK ABSORBERS II

ANSWER KEY

ACROSS:	DOWN:
1. SLEEVE	2. VERTICLE
4. BUSHING	3. MOUNTS
5. HEX	

```
S L E E V E
        E
  M     R
  O     T
B U S H I N G
  N     C
  T     L
  S   H E X
```

LEARNING WORDS USED IN SERVICING MANUAL STEERING GEAR

INTRODUCTION

The steering gear is designed so the front wheels may be turned easily in either direction. Servicing the steering system, whether manual or power, is very important. Worn or loose steering gear parts will cause the vehicle to wander or weave on the road. Steering gears are mounted in a housing which is attached to the frame of the vehicle. In this unit you will learn the technical vocabulary related to servicing manual steering gear.

PERFORMANCE OBJECTIVES

You will match 4 words used in servicing manual steer gear with their definitions. Your teacher will provide a list of words and definitions. You should match all the words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.

2. COVER **only** the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER **all** rows of words, definitions, and pictures except **one**. LOOK AT the word, definition, and picture. LISTEN to the definitoin as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

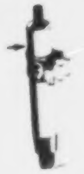
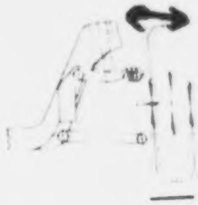
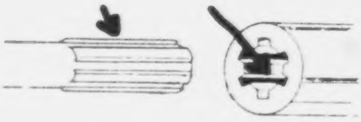
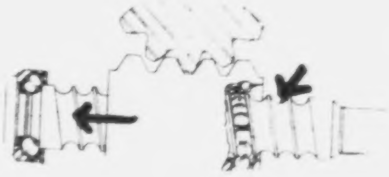
10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

SERVICING MANUAL STEERING GEAR

cross shaft (cross shaft)	a shaft that meshes with the steering shaft worm	
shimmy (shim my)	front wheels shaking from side to side	
spline (spline)	ridges on a shaft made to fit into grooves on another part	
worm gear (worm gear)	meshing of a screw thread and gear assembly	

SERVICING MANUAL STEERING GEAR

Word Find and Crossword Puzzles for Units AM-29 and AM-30 have been combined into one group of puzzles and may be found on Pages AM-30-3 to AM-30-6.

LEARNING WORDS USED IN INSPECTING LIGHTING SYSTEM

INTRODUCTION

There are times when the mechanic will be required to check the lighting system of an automobile. This may be during a routine inspection or when the vehicle is brought in for the required state inspection sticker. The lighting system must function properly for the safety of the vehicle operator and others who are either walking or driving along the roadway. In this unit you will learn the technical vocabulary related to inspecting the lighting system.

PERFORMANCE OBJECTIVES

You will match 17 words used in inspecting lighting systems with their definitions. Your teacher will provide a list of words and definitions. You should match at least 13 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.

2. COVER **only** the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER **all** rows of words, definitions, and pictures except **one**. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

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2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

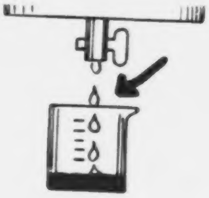
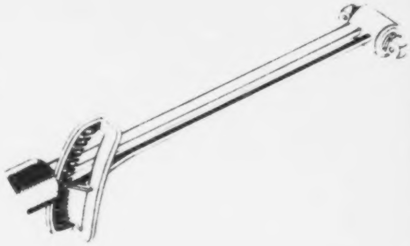
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

REPLACING POWER STEERING PUMPS AND COMPONENTS

seepage (seep age)	a slow leak	
torque wrench (torque wrench)	a tool used to tighten a nut or bolt to certain limits of tension	

MANUAL & POWER STEERING

T O R Q U E W R E N C H S H I M M Y A

J N H J G M F J P S R Q P V L U D S Y

A L Y L V L W V J E G M C J N V L A E

A L I G N M E N T I S J I A O W P L Q

V D X E S Z K J S F H D D I V K X I S

C R O S S S H A F T J C B U S H I N G

L I N K A G E S H V R T U V K Z R R M

J E X N Y X G Q B A A U F V U H A X A

P Z N J F L G C H A S S I S Z Y T P M

O Z D F E U M Z A Z P A Q L A H T A M

U O Y B O O I K H T P J F K U O V E R

F A C W F Q R P S W V H A D M F X T E

H O I S T Y R E V N J A D I B V N Z J

C R O C U S C L O T H N G C Z U O X Q

J F L A N G E V S O W J S Z L H U P H

D A X S Y X N W V S P L I N E Y I V O

J C O M P O N E N T S X N W M T S V I

O Y P X W O R M G E A R S E E P A G E

Can you find these words?

TORQUE WRENCH
CROSS SHAFT
CHASSIS
SEEPAGE
SHIMMY

CROCUS CLOTH
ALIGNMENT
LINKAGE
FLANGE
HOIST

COMPONENTS
WORM GEAR
BUSHING
SPLINE

ACROSS

MANUAL & POWER STEERING

ANSWER KEY

```
T O R Q U E W R E N C H S H I M M Y .
. . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . .
A L I G N M E N T . . . . . . . . . .
. . . . . . . . . . . . . . . . . . .
C R O S S S H A F T . . B U S H I N G
L I N K A G E . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . .
. . . . . . . C H A S S I S . . . . .
. . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . .
H O I S T . . . . . . . . . . . . . .
C R O C U S C L O T H . . . . . . . .
. F L A N G E . . . . . . . . . . . .
. . . . . . . . . S P L I N E . . . .
. C O M P O N E N T S . . . . . . . .
. . . . W O R M G E A R S E E P A G E
```

MANUAL & POWER STEERING

Q W N Y A C C K G A N O S B D H B

J Y H G H P I S P L I N E Q V D X

F S X F S C H I N I G I Q B O R N

L K K C E C D F M G E U I W O K D

Q H D C J H N L I N T C D J L C I

A U T Q V Z U A J M Q K F S D N E

C N T G W G Q N J E S F L K Q X L

N Y E U S A L G X N K Q Q N E B I

F C O M P O N E N T S K V T Y P N

C R O S S S H A F T R F U W M A T

W O R M G E A R S J S J I U M X N

C C H A S S I S V U C I H I T R Z

P U E A N D M I Z E B E M L Y L K

W S O G Z O K I V E U Z U V P T X

I C K P L T P E G H S E E P A G E

T L I N K A G E Z S H I M M Y O A

D O N G Z B E U H O I S T S I H A

U T O R Q U E W R E N C H I I A K

F H F Q B V W H G F G H W J I B B

Can you find these words?

TORQUE WRENCH
CROSS SHAFT
CHASSIS
SEEPAGE
SHIMMY
CROCUS CLOTH
ALIGNMENT
LINKAGE
FLANGE
HOIST
COMPONENTS
WORM GEAR
BUSHING
SPLINE

ACROSS/DOWN

MANUAL & POWER STEERING

ANSWER KEY

```
. . . . . . . . . A . . . . . . .
. . . . . . . S P L I N E . . . .
. . . . . . . . . I . . . . . . .
. . . . . . . F . G . . . . . . .
. . . . . . . L . N . . . . . . .
. . . . . . . A . M . . . . . . .
. . . . . . . N . E . . . . . . .
. . . . . . . G . N . . . . . . .
. C O M P O N E N T S . . . . . .
C R O S S S H A F T . . . . . . .
W O R M G E A R . . . . . . . . .
. C H A S S I S . . . . . . . . .
. U . . . . . . . . B . . . . . .
. S . . . . . . . . U . . . . . .
. C . . . . . . . . S E E P A G E
. L I N K A G E . S H I M M Y . .
. O . . . . . . H O I S T . . . .
. T O R Q U E W R E N C H . . . .
. H . . . . . . . . G . . . . . .
```

MANUAL & POWER STEERING

V Z E P V U F J C F X R H C D P A T C L Z

F J G Z G A Y U H E X E Z H H L F D D I N

K F X Y S E B E C W O R M G E A R T I Q Z

M S E O Y Y G C T B A M U B H L S D N H A

F H E F L L B P F T B S U S T I U S G B E

Y X W E F I W L W O H U S C O G F D I Z F

G C O M P O N E N T S S S H X N R L E S S

K P N Z K A F K O K O C R H N M Z E I I E

O J C Z K L G L A R E R W Q I E G L T L G

C A K M O O C E C G Z Z Q A U N T I F X B

G S V X M S P L I N E Y I U A T G Z Y I I

P L X A U W H Q C K E M G L E V W Y K J A

P Z D C J S P I L W C C F K O W E R E G U

F G O V E P H A M J B A J I M A R B L K Q

V R L Y N V C C Y M F F Y Z Z T O E Y S S

C P G T T J Q R A B Y Z D Z T Q N T N Z O

N O S Y I N K D Q X P Y X M A U C F B C V

S L Y Y U R L D Z N X F H S S G O H A J H

Can you find these words?

TORQUE WRENCH
CROSS SHAFT
CHASSIS
SEEPAGE
SHIMMY
CROCUS CLOTH
ALIGNMENT
LINKAGE
FLANGE
HOIST
COMPONENTS
WORM GEAR
BUSHING
SPLINE

ACROSS/DOWN/DIAGONAL

MANUAL & POWER STEERING

ANSWER KEY

```
. . . . . . . . . . . . . C . . . T . . .
. . . . . . . . . . . . . . H . F . . . .
. . . . . . . . . W O R M G E A R T . . .
. S . . . . . . . . . . . . H L S . . . .
. . E . L . . . . . B . . S . I . S . . .
. . . E . I . . . . H U S . O G . . I . .
. C O M P O N E N T S S S H . N . . . S .
. . . . . A . K O . O . . H . M . E . . .
. . . . . . G L A R . R . . I E G . . . .
. . . . . . C E C G . . Q . . N . . . . .
. . . . . S P L I N E . . U A T G . . . .
. . . . U . H . . . . . . L E . . . . . .
. . . C . . . I . . . . F . . W . . . . .
. . O . . . . . M . . . . . . . R . . . .
. R . . . . . . . M . . . . . . . E . . .
C . . . . . . . . . Y . . . . . . . N . .
. . . . . . . . . . . . . . . . . . . C .
. . . . . . . . . . . . . . . . . . . . H
```

MANUAL & POWER STEERING

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	2							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	3						XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	4												XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. a slow leak
3. front wheels shaking from side to side
4. a tool used to tighten a nut or bolt to certain limits (2 words)

DOWN:

1. a shaft that works with steering shaft worm (2 words)
3. ridges on a shaft made to fit into another part

MANUAL POWER STEERING

ANSWER KEY

ACROSS:		DOWN:	
2.	SEEPAGE	1.	CROSSSHAFT
3.	SHIMMY	3.	SPLINE
4.	TORQUEWRENCH		

```
C

R

O

S E E P A G E

S               S H I M M Y

S               P

H               L

A               I

F               N

T O R Q U E W R E N C H
```

LEARNING WORDS USED IN REPLACING POWER STEERING PUMPS AND COMPONENTS

INTRODUCTION

The location of faulty steering problems is frequently found to be in areas other than the steering gear or pump. Areas of the steering system, as indicated in previous units, which can be easily checked and quickly corrected without disassembly and major overhaul of components should be checked first. Conditions such as hard or loose steering, road shock, or vibrations are not always due to the steering gear or pump but are often related to low tire pressure and front-end alignment. These factors should always be checked first and corrected before adjustments and disassembly of the power steering gear or pump is attempted. In this unit you will learn the technical vocabulary related to power steering pumps and components.

PERFORMANCE OBJECTIVES

You will match 2 words used in replacing power steering pumps and components with their definitions. Your teacher will provide a list of words and definitions. You should match both of the words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER **only** the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER **all** rows of words, definitions, and pictures except **one**. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

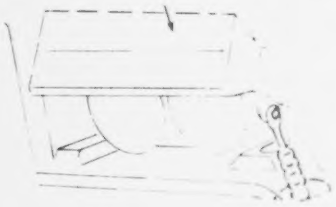
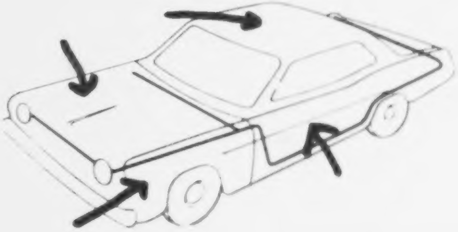
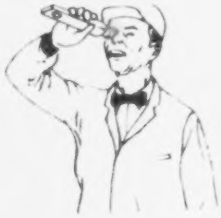
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

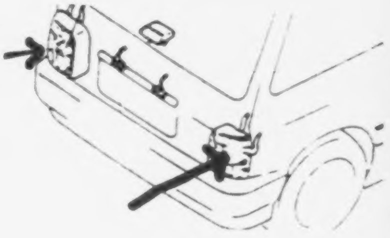
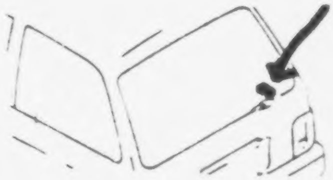
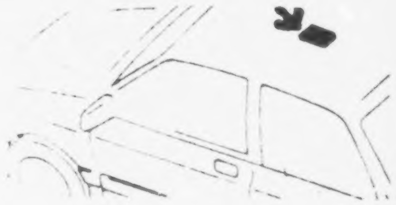
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

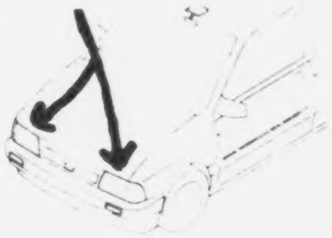
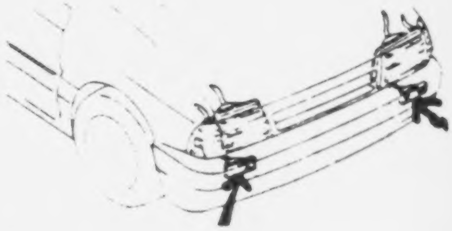
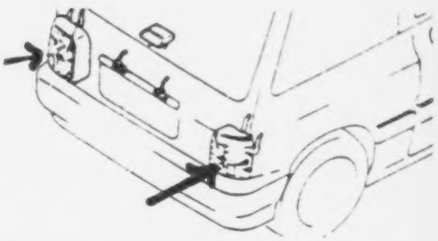
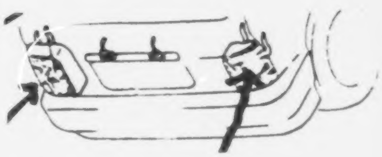
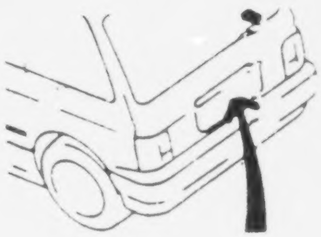
LIGHTING SYSTEM

concealed (con cealed)	hidden	
exterior (ex ter ior)	outside	
malfunction (mal func tion)	not working correctly	
temporarily (tem po rar i ly)	for a short time	
visually (vi su al ly) inspect (in spect)	look carefully	

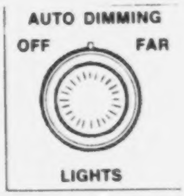
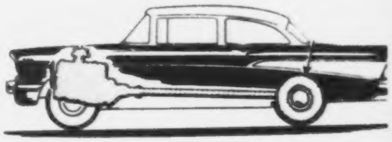
LIGHTING SYSTEM

lighting system (light ing sys tem)	all the parts that make the lights work	
back-up lights (back-up lights)	white lights at the rear of a vehicle that are on when it is in reverse	
brake lights (brake lights)	red lights at the rear of a vehicle that come on when the brakes are applied	
clearance lights (clear ance lights)	lights that mark the outside edges of the vehicle	
courtesy lights (cour te sy lights)	lights inside a vehicle that are on when a door is opened	

LIGHTING SYSTEM

headlights (head lights)	main driving lights on the front of a vehicle	
parking lights (park ing lights)	small yellow lights at the front of a vehicle	
tail lights (tail lights)	red lights at the rear of a vehicle that are on when the headlights are turned on	
turn signal (turn sig nal lights (lights)	lights on the right and left side of the vehicle, in front and in back, that show which way the driver will turn	
license plate (li cense plate lights (lights)	small white lights that shine on the license plate	

LIGHTING SYSTEM

control switch (con trol switch)	the knob or button that turns on the lights	 AUTO DIMMING OFF FAR LIGHTS LIGHT SWITCH
vehicle (ve hi cle)	something that carries people (like a car, truck or van)	

LIGHTING SYSTEM

M A L F U N C T I O N T U R N S I G N A L
D V O P A W B A C K U P U A Y W A V D U I
Y B D N Z V C Z Z S V P R S U Q R J J V O
V M N X X Y X W J I M U R C R Y K P G J V
K M P X U R E I Z A T A R Y V A M W I O P
C L E A R A N C E Q Y V U B J I K G V M K
C R N K X F J Q Q T D V L W M E I F G N D
I I Z Q S I J G X O A Y J R Q R Y Q I X C
C S Z D J I Y Z P A R K I N G H J Z S C C
B K S Z M H F R K W Y N D A H M Q X H E Y
Q W Q B V M E A H K P F J F L D I X H I F
E I X R Y R J F L P U X M L S E Z U T B D
C O U R T E S Y E X T E R I O R H U D T J
V E H I C L E U A M O W L X Q Y K Z N X H
F K U N G Y M S A U E M W Y A S O O W X V
O B H W V W E W U V T S T B R D W L O F E
H E A D L I G H T S V L T X T G R Z A U X
D A J Z U H B U Z D J S J M S J L O J X J
C C Q Q X S G V X F A G B R A K E L M G R

Can you find these words?

MALFUNCTION
CLEARANCE
VEHICLE
BRAKE

TURN SIGNAL
COURTESY
PARKING

HEADLIGHTS
EXTERIOR
BACK-UP

ACROSS

LIGHTING SYSTEM

ANSWER KEY

```
M A L F U N C T I O N T U R N S I G N A L
. . . . . . B A C K U P . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
C L E A R A N C E . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . P A R K I N G . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
C O U R T E S Y E X T E R I O R . . . . .
V E H I C L E . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
H E A D L I G H T S . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . B R A K E . . . .
```

AM-31-15

LIGHTING SYSTEM

B A C K U P Y M A K F C Q G E
R Q U G M A M K E Q Z B I M M
A E X T E R I O R K P L X E P
K U Z U V K H X T V N D V K I
E R G R H I R C O U R T E S Y
Z M L N E N E L W E F Q H K Z
W E V S H G N E I P N O I G L
P C X I E T M A U V Z U C N K
F X R G A V P R H K V E L I E
E V N N D V I A N O T K E D J
Y M M A L F U N C T I O N G E
S B G L I Z B C N G E M O Y H
O M I Q G P S E Y E E T G F A
G V O D H T G R A O E P I J W
E P M N T P Q J D S D W F X G
F F P N S X H R K M K Q W P M

Can you find these words?

MALFUNCTION
CLEARANCE
VEHICLE
BRAKE
TURN SIGNAL
COURTESY
PARKING
HEADLIGHTS
EXTERIOR
BACK-UP

ACROSS/DOWN

LIGHTING SYSTEM

ANSWER KEY

```
B A C K U P . . . . . . . . .
R . . . . A . . . . . . . . .
A E X T E R I O R . . . . . .
K . . U . K . . . . . . V . .
E . . R . I . C O U R T E S Y
. . . N . N . L . . . . H . .
. . . S H G . E . . . . I . .
. . . I E . . A . . . . C . .
. . . G A . . R . . . . L . .
. . . N D . . A . . . . E . .
. . M A L F U N C T I O N . .
. . . L I . . C . . . . . . .
. . . . G . . E . . . . . . .
. . . . H . . . . . . . . . .
. . . . T . . . . . . . . . .
. . . . S . . . . . . . . . .
```

AM-31-17

LIGHTING SYSTEM

Q	J	K	Z	X	I	O	Y	R	V	Q	L	N	T	A	O	K	L	I	G
C	Y	O	G	T	T	S	J	S	U	Y	C	M	X	Z	A	N	J	H	O
T	F	M	E	F	E	K	G	W	R	X	L	V	U	T	L	W	N	A	D
H	B	O	G	T	M	A	S	O	K	P	V	M	K	O	Z	G	J	D	V
O	Z	B	R	A	K	E	I	X	Q	K	N	X	G	X	T	B	T	R	P
B	M	U	R	B	A	R	K	F	M	T	D	S	Q	F	K	K	J	W	F
A	O	O	Z	V	E	Q	G	A	K	E	L	N	Q	V	J	H	S	B	W
C	L	A	M	T	W	D	C	D	I	E	J	Z	T	X	I	D	D	P	N
K	L	H	X	M	A	N	K	U	I	U	R	V	L	D	V	B	K	O	G
U	V	E	H	I	C	L	E	P	R	M	O	W	Y	U	W	C	I	Y	T
P	H	A	A	R	B	Y	N	R	R	C	U	L	H	P	Q	T	C	H	R
C	D	D	S	R	P	Q	I	L	U	I	M	V	F	L	C	N	H	W	G
D	W	L	T	U	A	O	U	E	Q	M	U	R	V	N	M	W	I	T	L
D	H	I	J	B	R	N	T	O	P	W	L	W	U	J	U	N	L	R	N
Q	N	G	Z	A	K	L	C	Z	H	E	T	F	U	R	O	R	F	U	V
Y	D	H	Y	U	I	K	U	E	N	E	L	R	X	W	I	B	R	G	T
Z	E	T	U	R	N	S	I	G	N	A	L	R	S	G	I	B	C	E	N
T	R	S	M	D	G	R	H	U	M	V	R	Q	U	L	Y	Z	A	L	W

Can you find these words?

MALFUNCTION
CLEARANCE
VEHICLE
BRAKE

TURN SIGNAL
COURTESY
PARKING

HEADLIGHTS
EXTERIOR
BACK-UP

ACROSS/DOWN/DIAGONAL

LIGHTING SYSTEM

ANSWER KEY

```
. . . . . . . Y . . . . . . . . . . . .
. . . . . . S . . . . . . . . . . . . .
. . . . . E . . . R . . . . . . . . . .
. . . . T . . . O . . . . . . . . . . .
. . B R A K E I . . . . . . . . . . . .
B . U . . . R . . . . . . . . . . . . .
A O . . . E . . . . . . . . . . . . . .
C . . . T . . . . . . . . . . . . . . N
K L H X . . . . . . . . . . . . . . O .
U V E H I C L E . . . . . . . . . I . .
P . A A . . . . . . . . . . . . T . . .
. . D . R P . . . . . . . . . C . . . .
. . L . . A . . . . . . . . N . . . . .
. . I . . R N . . . . . . U . . . . . .
. . G . . K . C . . . . F . . . . . . .
. . H . . I . . E . . L . . . . . . . .
. . T U R N S I G N A L . . . . . . . .
. . S . . G . . . M . . . . . . . . . .
```

LIGHTING SYSTEM I

XX XX	1										2		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	3									XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	4										XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	5										XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

1. white lights at rear of vehicle that are on when it is in reverse (-) (2 words)
3. hidden
4. red lights at rear of vehicle that are on when headlights are turned on (2 words)
5. main driving lights on front of a vehicle

DOWN:

1. red lights at rear of vehicle that come on when brakes are touched (2 words)
2. for a short time

LIGHTING SYSTEM I

ANSWER KEY

ACROSS:		DOWN:	
1.	BACKUPLIGHTS	1.	BRAKELIGHTS
3.	CONCEALED	2.	TEMPORARILY
4.	TAILLIGHTS		
5.	HEADLIGHTS		

```
B A C K U P L I G H T S
R                   E
A                   M
K                   P
E                 C O N C E A L E D
L                   R
I                 T A I L L I G H T S
G                   R
H         H E A D L I G H T S
T                   L
S                   Y
```

LIGHTING SYSTEM II

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	2														XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	3	XX XX	XX XX	4	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	5															XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. the lights inside a vehicle that are on when a door is opened (2 words)
5. look carefully (2 words)

DOWN:

1. all the parts that make the lights work (2 words)
2. knob or button that turns the lights on (2 words)
3. something that carries people
4. outside

LIGHTING SYSTEM II

ANSWER KEY

ACROSS:

2. COURTESYLIGHTS
5. VISUALLYINSPECT

DOWN:

1. LIGHTINGSYSTEM
2. CONTROLSWITCHES
3. VEHICLE
4. EXTERIOR

```
                    L
  C O U R T E S Y L I G H T S
  O                 G
  N                 H
  T                 T
  R       V     E   I
  O       E     X   N
  L       H     T   G
  S       I     E   S
  W       C     R   Y
V I S U A L L Y I N S P E C T
  T       E     O   T
  C             R   E
  H                 M
  E
  S
```

LIGHTING SYSTEM III

XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	2											XX XX	3	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	4													XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	5																XX XX	XX XX

ACROSS:

2. not working
4. small yellow lights at front of vehicle (2 words)
5. lights on side of vehicle, in front & back, that show which way driver will turn

DOWN:

1. lights on outside edges of the vehicle (2 words)
3. outside

AM-31-24

LIGHTING SYSTEM III

ACROSS:		DOWN:	
2.	MALFUNCTION	1.	CLEARANCELIGHT
4.	PARKINGLIGHTS	3.	EXTERIOR
5.	TURNSIGNALLIGHTS		

```
    C
M A L F U N C T I O N   E
    E                   X
  P A R K I N G L I G H T S
    R                   E
    A                   R
    N                   I
    C                   O
    E                   R
    L
    I
    G
    H
    T U R N S I G N A L L I G H T S
```

LEARNING WORDS USED IN SERVICING LIGHTING SYSTEMS

INTRODUCTION

Many states have laws requiring an automobile owner to either obtain a certificate of proof that his headlights have been properly aimed by a professional mechanic, or to have his headlights checked and aimed by state-licensed inspectors. Headlight aim should be checked regularly to prevent blinding oncoming drivers during nighttime driving and to provide maximum visibility for the vehicle operator. In this unit you will learn the technical vocabulary related to repairing and replacing components and flasher units.

PERFORMANCE OBJECTIVES

You will match 10 words used in servicing lighting systems with their definitions. Your teacher will provide a list of words and definitions. You should match at least 8 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.

2. COVER **only** the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER **all** rows of words, definitions, and pictures except **one**. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

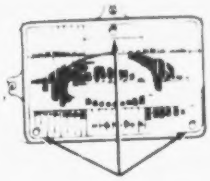
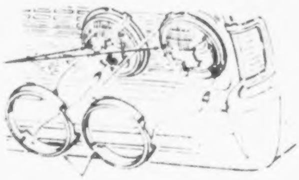
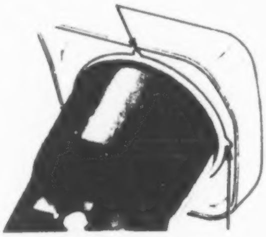
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

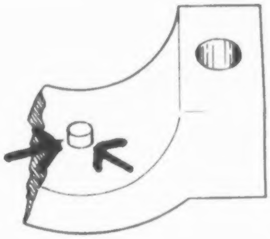
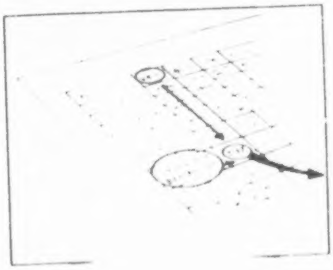
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

LIGHTING SYSTEM

head lamp lenses (head lamp lens es)	glass that covers headlights	
bezels (bez els)	trim rings around headlights	
headlight aimer (head light aim er)	a device that shows where the headlights point	
mechanical-type (me chan i cal-type) aimers (aim ers)	attach to the headlight lens	
visibility (vis i bil i ty)	how well an object can be seen	

LIGHTING SYSTEM

equalize (e qual ize)	to make the same	
maximum (max i mum)	greatest	
obstructing (ob struct ing)	blocking; in the way	
protruding (pro trud ing)	sticking out	
specification (spec i fi ca tion)	a detailed plan for measurements	

SERVICING LIGHTING SYSTEM

H	E	A	D	L	I	G	H	T	A	I	M	E	R	C	Y	X	F	Z	S	A
Y	S	B	H	I	O	J	Z	J	E	E	Y	D	M	T	T	B	U	X	H	L
G	Z	C	X	D	H	E	A	D	L	A	M	P	L	E	N	S	E	S	F	W
B	E	Z	E	L	S	U	G	Z	I	X	Q	J	G	R	X	K	O	T	K	L
J	K	M	Z	S	K	N	J	T	Q	Q	M	O	B	F	R	F	K	C	P	M
I	V	I	S	L	C	P	B	V	S	P	W	R	S	A	V	M	R	D	J	N
O	G	K	I	R	O	N	A	A	K	E	V	B	W	J	F	I	H	N	E	S
P	C	U	B	X	T	R	S	P	K	R	Z	K	O	M	G	L	F	G	L	D
S	W	L	T	W	H	X	O	D	K	K	I	X	P	M	I	T	N	T	I	L
G	E	Q	U	A	L	I	Z	E	I	S	N	G	K	R	S	F	K	E	R	R
E	P	U	U	D	Q	A	I	S	I	D	E	O	S	P	I	I	I	K	Y	P
R	V	L	L	P	B	K	D	B	F	X	O	P	R	T	O	Y	P	J	M	U
A	U	E	H	F	B	P	D	C	V	J	L	X	N	L	R	Q	P	R	C	V
V	Y	N	B	P	B	J	V	I	S	I	B	I	L	I	T	Y	Y	C	R	U
L	N	R	P	J	F	Z	M	Y	H	T	H	H	K	C	Y	M	J	G	T	O
J	M	T	U	F	O	W	E	S	F	H	L	Z	W	X	I	A	Y	Q	P	H
J	D	H	I	U	S	B	F	J	U	G	A	M	X	D	Y	N	R	S	N	O
Q	M	P	A	R	Y	C	C	W	V	G	M	L	M	F	A	C	J	A	H	T
X	R	Q	R	X	T	E	T	W	U	D	A	M	F	M	A	X	I	M	U	M

Can you find these words?

HEADLIGHT AIMER
EQUALIZE
HEADLAMP LENSES
BEZELS
VISIBILITY
MAXIMUM

ACROSS

SERVICING LIGHTING SYSTEM

ANSWER KEY

```
H E A D L I G H T A I M E R . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . H E A D L A M P L E N S E S . .
B E Z E L S . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. E Q U A L I Z E . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . V I S I B I L I T Y . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . M A X I M U M
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AM-32-11

SERVICING LIGHTING SYSTEM

A	G	L	Y	M	M	G	I	C	G	A	N	Q	B	E	Z	E	L	S	N
O	Z	V	K	H	R	Z	A	A	O	K	M	I	Q	A	E	I	U	O	P
Q	C	N	A	Y	Z	M	A	G	O	N	A	Y	R	P	N	V	L	I	V
I	E	I	S	O	C	E	M	B	H	P	X	R	R	H	H	K	T	W	L
L	Q	Y	R	P	W	H	E	A	D	L	I	G	H	T	A	I	M	E	R
Q	U	R	B	F	E	E	U	Y	Y	G	M	W	D	N	J	K	J	W	V
Z	A	Z	C	S	A	A	E	C	Y	L	U	Q	K	T	O	N	A	I	G
L	L	W	U	W	O	D	P	V	V	U	M	Y	D	S	P	L	K	I	P
V	I	S	I	B	I	L	I	T	Y	E	H	L	V	V	A	X	C	I	O
N	Z	Z	S	N	Z	A	I	Y	U	N	J	D	S	O	L	V	W	P	R
G	E	G	Y	H	I	M	O	G	V	Y	Y	E	X	U	F	C	L	Y	K
N	B	J	K	C	Z	P	X	Q	N	F	S	D	U	H	M	U	E	U	O
P	H	J	J	M	W	L	K	I	K	W	L	Q	G	M	J	U	F	X	A
L	G	T	M	P	A	E	A	O	W	S	U	T	X	T	O	U	A	K	W
V	V	Y	P	Q	T	N	W	F	U	D	R	V	H	X	E	O	S	Z	N
S	P	N	W	F	Z	S	C	K	E	P	D	V	S	D	D	W	C	U	V
G	W	P	U	D	U	E	B	I	I	T	U	N	M	D	X	L	P	L	V
M	Q	U	G	H	R	S	U	R	A	O	O	B	Z	V	S	U	E	D	T

Can you find these words?

HEADLIGHT AIMER
EQUALIZE
HEADLAMP LENSES
BEZELS
VISIBILITY
MAXIMUM

ACROSS/DOWN

SERVICING LIGHTING SYSTEM

ANSWER KEY

```
. . . . . . . . . . . . . B E Z E L S .
. . . . . . . . . . . M . . . . . . . .
. . . . . . . . . . . A . . . . . . . .
. E . . . . E . . . . X . . . . . . . .
. Q . . . . H E A D L I G H T A I M E R
. U . . . . E . . . . M . . . . . . . .
. A . . . . A . . . . U . . . . . . . .
. L . . . . D . . . . M . . . . . . . .
V I S I B I L I T Y . . . . . . . . . .
. Z . . . . A . . . . . . . . . . . . .
. E . . . . M . . . . . . . . . . . . .
. . . . . . P . . . . . . . . . . . . .
. . . . . . L . . . . . . . . . . . . .
. . . . . . E . . . . . . . . . . . . .
. . . . . . N . . . . . . . . . . . . .
. . . . . . S . . . . . . . . . . . . .
. . . . . . E . . . . . . . . . . . . .
. . . . . . S . . . . . . . . . . . . .
```

SERVICING LIGHTING SYSTEM

M	S	Q	A	X	C	U	J	E	O	U	A	P	I	A	U	M	L
K	P	W	C	W	A	T	I	S	E	S	S	Z	Q	A	Y	W	H
P	B	Y	Q	H	X	I	J	X	L	O	P	N	L	T	O	K	M
J	M	O	X	I	S	Z	V	A	D	G	R	R	I	N	Y	I	N
L	U	K	F	H	E	A	D	L	A	M	P	L	E	N	S	E	S
T	U	X	Q	E	A	O	S	A	R	K	I	O	Q	C	C	M	M
W	M	I	S	A	Q	V	Y	J	Q	B	G	C	A	H	S	C	J
W	H	A	L	D	S	U	M	W	I	Q	U	Z	F	E	O	D	M
D	H	P	X	L	P	L	A	S	E	E	C	F	M	G	L	F	P
W	O	K	E	I	X	J	I	L	X	W	M	F	V	M	P	M	P
T	S	Z	T	G	M	V	D	U	I	B	U	V	E	F	D	F	C
S	E	X	V	H	D	U	B	G	N	Z	N	O	C	F	I	K	H
B	T	D	T	T	H	C	M	Y	J	R	E	Q	D	S	F	R	M
D	F	R	I	A	Y	T	Z	T	Q	O	W	Z	C	S	N	X	D
V	S	F	T	I	Z	L	C	V	J	M	L	T	W	J	O	Z	Q
T	Y	N	H	M	I	D	J	B	L	T	V	P	V	W	Z	U	E
R	P	J	K	E	V	F	M	N	J	A	C	L	K	Z	M	S	N
Z	R	L	G	R	M	H	V	E	N	W	J	R	F	K	I	J	P

Can you find these words?

HEADLIGHT AIMER
EQUALIZE
HEADLAMP LENSES
BEZELS
VISIBILITY
MAXIMUM

ACROSS/DOWN/DIAGONAL

SERVICING LIGHTING SYSTEM

ANSWER KEY

```
. . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . Y . .
. . . . . . . . . . . . . . T . . .
. . . . . . . . . . . . . I . . . .
. . . . H E A D L A M P L E N S E S
. . . . E . . . . . . I . . . . . .
. M . . A Q . . . . B . . . . . . .
. . A . D S U . . I . . . . . . . .
. . . X L . . A S . . . . . . . . .
. . . E I . . I L . . . . . . . . .
. . Z . G M V . . I . . . . . . . .
. E . . H . U . . . Z . . . . . . .
B . . . T . . M . . . E . . . . . .
. . . . A . . . . . . . . . . . . .
. . . . I . . . . . . . . . . . . .
. . . . M . . . . . . . . . . . . .
. . . . E . . . . . . . . . . . . .
. . . . R . . . . . . . . . . . . .
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SERVICING LIGHTING SYSTEM I

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	3	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	4								XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	5											XX XX	XX XX
XX XX	6						XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

4. to make the same
5. blocking; in the way
6. rolled edge of metal that holds glass

DOWN:

1. greatest
3. degree of being seen

AM-32-16

SERVICING LIGHTING SYSTEM I

ANSWER KEY

ACROSS:		DOWN:	
4.	EQUALIZE	1.	MAXIMUM
5.	OBSTRUCTING	3.	VISIBILITY
6.	BEZELS		

```
                      M

              V       A

    E Q U A L I Z E   X

              S       I

              I       M

            O B S T R U C T I N G

B E Z E L S   I       M

              L

              I

              T

              Y
```

SERVICING LIGHTING SYSTEM II

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XY XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	1														XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	YX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	2										XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

1. a detailed plan for measurements
2. sticking out

SERVICING LIGHTING SYSTEM II

ACROSS:

1. SPECIFICATIONS
2. PROTRUDING

SPECIFICATIONS

PROTRUDING

LEARNING WORDS USED IN REPAIRING & REPLACING COMPONENTS & FLASHER UNITS

INTRODUCTION

The automobile lighting system, because of its importance for nighttime driving, has been engineered, designed, and constructed to give very reliable, trouble-free service. The system will seldom fail completely but will require an occasional bulb replacement or a turn signal light flasher replacement. One or more bulbs may fail to light because of a ground, open, or short circuit which may be the result of a pinched, stretched, or chafed insulated wire or wire harness. When this condition does occur, the mechanic must have the knowledge necessary to trace the circuits to find the problem and then to replace or repair the system to comply with the manufacturer's high standards of safety. In this unit you will learn the technical vocabulary related to servicing lighting systems.

PERFORMANCE OBJECTIVES

You will match 15 words used in repairing and replacing components and flasher units with their definitions. Your teacher will provide a list of words and definitions. You should match at least 12 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definitoin as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

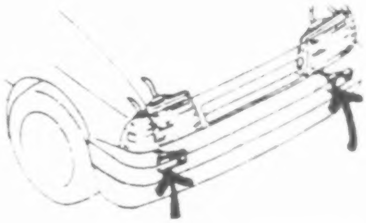
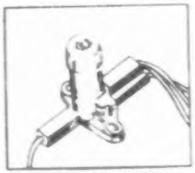
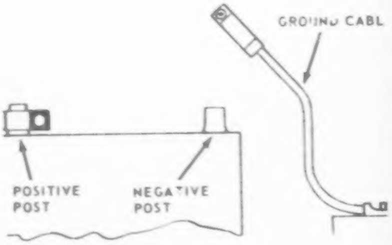
1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
4. USE the Answer Key on the back of the activity page when needed.

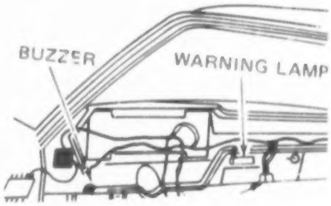
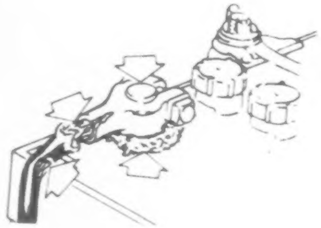
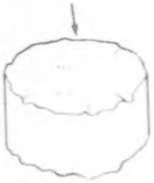
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

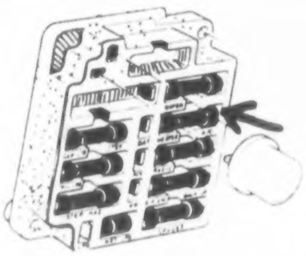
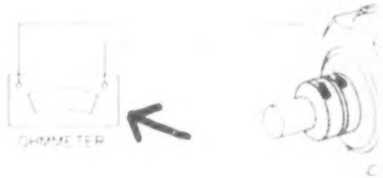
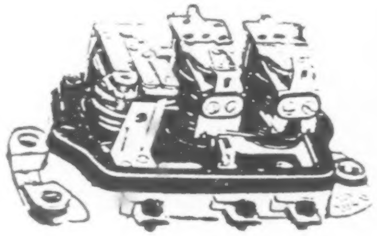
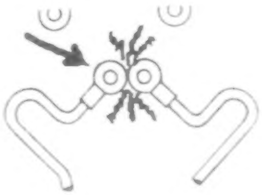
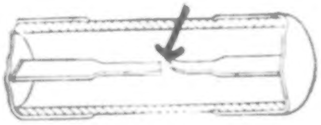
REPAIRING & REPLACING COMPONENTS & FLASHER UNITS

flasher (flash er)	a circuit breaker that makes turn signals flash or blink	
directional (di rec tion al) flasher lights (flash er lights)	lights that show right or left turns	
emergency (e mer gen cy) flasher lights (flash er lights)	two front and two rear lights that a driver uses to signal that the vehicle has a problem	
dimmer switch (dim mer switch)	electric switch that controls the head lights from high to low beam	 FOOT SWITCH
ground circuit (ground cir cuit)	the cable that is fastened to the body of the vehicle and the metal parts of the vehicle	

REPAIRING & REPLACING COMPONENTS & FLASHER UNITS

component (com po nent)	a part of a system	
defective (de fec tive)	not working right	
corrosion (cor ro sion)	rusting or wearing away of metal	
chafe (chafe)	to wear away by rubbing	
inoperative (in op era tive)	not working	

REPAIRING & REPLACING COMPONENTS & FLASHER UNITS

fuse box (fuse box)	a case that holds fuses to the automobile electric circuits	
ohmmeter (ohm me ter)	used to measure the amount of resistence in an electrical outlet	
voltage regulator (volt age) regulator (reg u la tor)	used to control generator voltage and current output	
short circuit (short cir cuit)	when a hot wire of an electrical system is grounded accidentally	
open circuit (o pen cir cuit)	a circuit which is broken so there is an opening and no current can flow	

COMPONENTS & FLASHER UNIT

G R O U N D C I R C U I T K Y T J Z S Z Y

X S Q X M G H Z S S M H A Z H U V C D Z A

S K Y I Z D D K P X X X M V I H D Y C R W

M I J D C O D E F E C T I V E M M K P S S

J Z Y S N X F X U I C B S E C F T K R B M

F U S E B O X Z C H A F E T D S J W J U K

F L A S H E R H H J N T Z Q V V D L M F U

N K M N A D M F Z Q O L L N V T H G G E T

D J O P E N C I R C U I T V W I L U X E Z

O H M M E T E R L L J T S Y K O H Z D C I

X R E Y B X Q T H C O M P O N E N T B D W

J P J P H L H M Z I D E N I M S U C Z S E

T Q S J F Q U Q D N Y R T D I M B X U X M

G O E W D X H E G W K Z L Q K B Y L Q Q V

L E R K C P U K Z O A Z M K V Z U A T N Z

S H O R T C I R C U I T C O R R O S I O N

D I M M E R S W I T C H N Z Q F Z Q V M J

Can you find these words?

GROUND CIRCUIT
OPEN CIRCUIT
COMPONENT
FLASHER
SHORT CIRCUIT
DEFECTIVE
OHMMETER
CHAFE
DIMMER SWITCH
CORROSION
FUSE BOX

ACROSS

COMPONENTS & FLASHER UNIT

ANSWER KEY

```
G R O U N D C I R C U I T . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . D E F E C T I V E . . . . . .
. . . . . . . . . . . . . . . . . . . . .
F U S E B O X . C H A F E . . . . . . . .
F L A S H E R . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . O P E N C I R C U I T . . . . . . . .
O H M M E T E R . . . . . . . . . . . . .
. . . . . . . . . C O M P O N E N T . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
S H O R T C I R C U I T C O R R O S I O N
D I M M E R S W I T C H . . . . . . . . .
```

COMPONENTS & FLASHER UNIT

B X V O I D C Z L Y N T L I Y Q H S S
O N Q K Z I O S X M Q V A F Q F T X F
C S H O H M M E T E R L V S N O U K W
T Q V U T M P M T H R S A N Z W W B Q
D G F U S E B O X I P V Q X B J F O X
M F L C W R S C G R P I A N Q D D L R
C H A F E S H O R T C I R C U I T M V
Y B S D U W N R O P E N C I R C U I T
R Y H J C I K R U Q Y Q K Z H X D U R
Z C E Q J T U O N Q Q S F R Y T K Y V
S Y R V S C J S D E F E C T I V E E W
B W M I P H M I C O M P O N E N T J L
A Q V F K B R O I G U X Z A G D G C X
Y O C S E X Z N R X D B F C W P L X O
K P W E O I S Y C V T F X D K B R O N
J E Q S R A J M U F U Z O N M O L Q Y
A M X U L F Z A I T U X M P K F G W B
G C D K H A Z L T H Y C T T U S Q Y P

Can you find these words?

GROUND CIRCUIT
OPEN CIRCUIT
COMPONENT
FLASHER
SHORT CIRCUIT
DEFECTIVE
OHMMETER
CHAFE
DIMMER SWITCH
CORROSION
FUSE BOX

ACROSS/DOWN

COMPONENTS & FLASHER UNIT

ANSWER KEY

```
. . . . . D . . . . . . . . . . . . .
. . . . . I . . . . . . . . . . . . .
. . . O H M M E T E R . . . . . . . .
. . . . . M . . . . . . . . . . . . .
. . F U S E B O X . . . . . . . . . .
. . L . . R . C G . . . . . . . . . .
C H A F E S H O R T C I R C U I T . .
. . S . . W . R O P E N C I R C U I T
. . H . . I . R U . . . . . . . . . .
. . E . . T . O N . . . . . . . . . .
. . R . . C . S D E F E C T I V E . .
. . . . . H . I C O M P O N E N T . .
. . . . . . . O I . . . . . . . . . .
. . . . . . . N R . . . . . . . . . .
. . . . . . . . C . . . . . . . . . .
. . . . . . . . U . . . . . . . . . .
. . . . . . . . I . . . . . . . . . .
. . . . . . . . T . . . . . . . . . .
```

COMPONENTS & FLASHER UNIT

Q D S J I U X X G D H P T B I N H M
U Y M Y B O M N Q L I T V E O U M R
C Y I Q B P R H V M L K Y I W G R V
I Z P E G E S T C N E C S H D T S Y
U T S G H N C H Q T L O K M V P A V
H U W S V C O U O G R H L H A A C Q
F C A W D I M M E R S W I T C H C Y
E L F Y E R P S O O T W T U G N K H
F U A R F C O C Q U H C K X M Z M V
L I O B E U N P I N I M I C S W H D
K F S S C I E S M D J X M R K Y G Y
H R Y T T T N Y J C H A F E C Q J Y
X E N R I V T A J I H J X A T U M J
W F J F V G M K M R T F L L X E I F
G C X G E R U L X C H F H Z M X R T
H M E U G U K M Z U I A O N V M O Y
D S H D V Q A R I I A P N I P L P H
K N B S C L R C T T E Y B A G P B V

Can you find these words?

GROUND CIRCUIT
OPEN CIRCUIT
COMPONENT
FLASHER

SHORT CIRCUIT
DEFECTIVE
OHMMETER
CHAFE

DIMMER SWITCH
CORROSION
FUSE BOX

ACROSS/DOWN/DIAGONAL

COMPONENTS & FLASHER UNIT

ANSWER KEY

```
. . . . . . X . . . . . . . . N . .
. . . . . O . . . . . . . . O . . .
. . . . B P R . . . . . . I . . . .
. . . E . E S . . . . . S . . . . .
. . S . H N C H . . . O . . . . . .
. U . S . C O . O G R . . . . . . .
F . A . D I M M E R S W I T C H . .
. L . . E R P . O O T . . . . . . .
F . . . F C O C . U H C . . . . . .
. . . . E U N . . N . M I . . . . .
. . . . C I E . . D . . M R . . . .
. . . . T T N . . C H A F E C . . .
. . . . I . T . . I . . . . T U . .
. . . . V . . . . R . . . . . E I .
. . . . E . . . . C . . . . . . R T
. . . . . . . . . U . . . . . . . .
. . . . . . . . . I . . . . . . . .
. . . . . . . . . T . . . . . . . .
```

FLASHER UNITS I

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	2												XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	3									XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	4		5		6					XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. electric unit that controls the dimmer lights (2 words)
3. rusting or wearing away of metal
4. not working right

DOWN:

1. the cable that is fastened to the body of the vehicle (2 words)
3. a part of a system
5. a circuit breaker that makes turn signals flash or blink
6. to heat or wear away by rubbing

FLASHER UNITS I

ANSWER KEY

ACROSS:

2. DIMMERSWITCH
3. CORROSION
4. DEFECTIVE

DOWN:

1. GROUNDCIRCUIT
3. COMPONENT
5. FLASHER
6. CHAFE

```
                G
      D I M M E R S W I T C H
                O
                U
C O R R O S I O N
O               D E F E C T I V E
M               C   L   H
P               I   A   A
O               R   S   F
N               C   H   E
E               U   E
N               I   R
T               T
```

FLASHER UNITS II

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1		2										XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	4											XX XX	XX XX
XX XX	5								XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	6							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

1. a hot wire of an electric system that is grounded (2 words)
4. not working
5. used to measure amount of resistence in a given unit or circuit
6. a case that holds fuses (2 words)

DOWN:

2. a circuit which is broken so there is an opening & no current can flow (2 words)

FLASHER UNITS II

ANSWER KEY

ACROSS:		DOWN:	
1.	SHORTCIRCUIT	2.	OPENCIRCUIT
4.	INOPERATIVE		
5.	OHMMETER		
6.	FUSEBOX		

```
          S H O R T C I R C U I T
              P
              E
              N
              C
              I N O P E R A T I V E
O H M M E T E R
              C
            F U S E B O X
              I
              T
```

LEARNING WORDS USED IN SERVICING ASSEMBLY FUSE BOX

INTRODUCTION

The function of fuses is to protect devices from being ruined in case the current flows at a rate that is too high. The metal strip in the fuse will melt opening the circuit and stopping the flow of current. In this unit you will learn the technical vocabulary related to an assembly fuse box.

PERFORMANCE OBJECTIVES

You will match 10 words used in servicing assembly fuse boxes with their definitions. Your teacher will provide a list of words and definitions. You should match at least 8 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definitoin as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

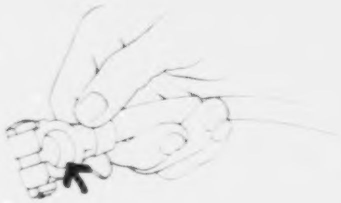
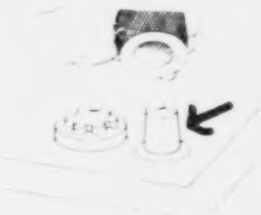
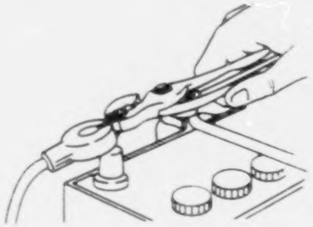
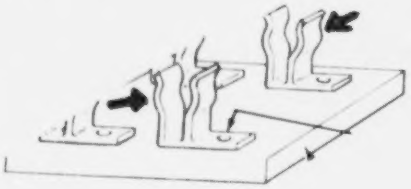
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

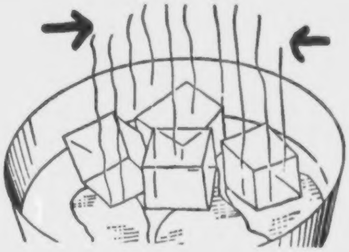
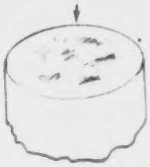
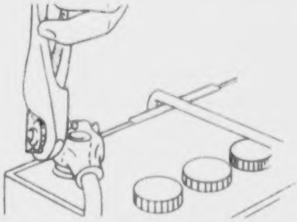
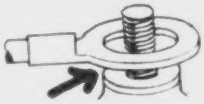
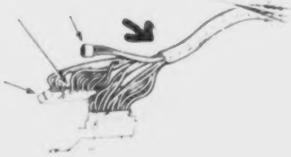
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

ASSEMBLY FUSE BOX

battery (bat ter y) ground cable (ground ca ble)	wire that joins the battery to the metal of the vehicl	
battery post (bat ter y post)	round lead post sticking up from the battery to fasten cables on	
consistently (con sis tent ly)	always behaving the same way	
disconnect (dis con nect)	to uncouple or separate	
fuse retaining (fuse re tain ing) spring clips (spring clips)	metal clamps in a fuse box	

ASSEMBLY FUSE BOX

humidity (hu mid i ty)	moisture in the air	
oxidize (ox i dize)	the joining of metal with	
reconnect (re con nect)	to join together	
terminal (ter mi nal)	connecting point in electrical circuit (usually where wire connects to component)	
wiring harness (wir ing harn ess)	a bundle of wires wrapped with a covering	

ASSEMBLY FUSE BOX

W I R I N G H A R N E S S M N W H U Q Y R
E T G B L U J B F E R P F H W W R C W I Q
N Q R G M R E C O N N E C T B N C T P Y G
H U M I D I T Y O X I D I Z E W O Q X N D
O M B J S S F Z T N Y E G H M P D K D P C
Q S T O G I H O X T E R M I N A L J E V J
Z W W W A A E T O T I E Y V K I N T U E L
F Q Z U H D A Y A Z X M W U Z P U Z L D Y
T K T K P A T N D C D M X D G O F O E M M
Z C G K X R G R U F I R Q V C O L M V W G
T X L R O S B D B K F A J K S J F B H L I
P B I D G I J R Z A H Y N E L E A Y X J K
W D X W V A W T C N D L T S Z V L W F C C
U B A Y V V L D I S C O N N E C T N I P Q
D E V Z U K A Z U D V U J X K W E F V J G
W K Q G L Y M N Q E O G T P J S T O P V R
S L Y N M M I E K Z M C L G Y N H F B D H
Q E J J U I W K Q D Q O K E K D V U S T U
Y R D U Z M C F Y A B A T T E R Y P O S T

Can you find these words?

WIRING HARNESS
RECONNECT
OXIDIZE
BATTERY POST
TERMINAL
DISCONNECT
HUMIDITY

ACROSS

AM-34-10

ASSEMBLY FUSE BOX

ANSWER KEY

```
W I R I N G H A R N E S S . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . R E C O N N E C T . . . . . . .
H U M I D I T Y O X I D I Z E . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . T E R M I N A L . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . D I S C O N N E C T . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . B A T T E R Y P O S T
```

ASSEMBLY FUSE BOX

Y J J U L C J R M K T I N Q U T Z I M C R
O D F Q C D T E C G Z X S O S X W I T W R
Y Y O K P R Z C X Z K K E O X Y A X J B U
Y T I Q P I D O W C G Z P L T A I Z U L J
F M D H D G G N F I L Y S I Q X E F H B Y
C W P I E P H N M A R D D N J P X W Z B G
T Z X S X P D E S E L I X V B A L L G H V
K O S B D Q N C T B M S N L C G M S A W S
N V O T F W R T J U B C D G B H X I L Z U
T E R M I N A L H U B O J K H X I I K P Q
P X F W E B K I I H Z N C E A A V T L V S
U T N X F J J A G O I N I Q R P R K R J B
N C O S M G T G L K N E J Z I P N N B X Q
G W T R L Y D G V Q X C Y Z Y I U M E E H
J M C F A A O V P W C T P F M H C J G S I
B U I H J A I F K M E B E S M S K G E V S

Can you find these words?

WIRING HARNESS
RECONNECT
OXIDIZE
BATTERY POST
TERMINAL
DISCONNECT
HUMIDITY

ACROSS/DOWN/DIAGONAL

ASSEMBLY FUSE BOX

ANSWER KEY

```
. . . . . . . R . . . . . . . T . . . . .
. . . . . . . E . . . . . . S . . . . . .
. . . . . . Z C . . . . . O . Y . . . . .
. . . . . I . O W . . . P . T . . . . . .
. . . . D . . N . I . Y . I . . . . . . .
. . . I . . . N . . R D D . . . . . . . .
. . X . . . . E . E . I . . . . . . . . .
. O . . . . . C T . M S N . . . . . . . .
. . . . . . . T . U . C . G . . . . . . .
T E R M I N A L H . . O . . H . . . . . .
. . . . . B . . . . . N . . . A . . . . .
. . . . . . . . . . . N . . . . R . . . .
. . . . . . . . . . . E . . . . . N . . .
. . . . . . . . . . . C . . . . . . E . .
. . . . . . . . . . . T . . . . . . . S .
. . . . . . . . . . . . . . . . . . . . S
```

ASSEMBLY FUSE BOX

1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	2	XX XX	XX XX	3		4						XX XX	XX XX	XX XX
	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	5							XX XX	XX XX
6										XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	7												XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

3. connecting point in electrical circuit
5. the joining of metal with air to make rust
6. to shut off
7. regularly

DOWN:

1. moisture in the air
2. round lead post sticking up from battery to fasten cables on (2 words)
4. to join together

ASSEMBLY FUSE BOX

ANSWER KEY

ACROSS:		DOWN:	
3.	TERMINAL	1.	HUMIDITY
5.	OXIDIZE	2.	BATTERYPOST
6.	DISCONNECT	4.	RECONNECT
7.	CONSISTENTLY		

H							B			T	E	R	M	I	N	A	L	
U							A					E						
M							T					C						
I							T					O	X	I	D	I	Z	E
D	I	S	C	O	N	N	E	C	T			N						
I							R					N						
T							Y					E						
Y							P					C						
						C	O	N	S	I	S	T	E	N	T	L	Y	
							S											
							T											

LEARNING WORDS USED TO ANALYZE FUEL SYSTEMS

INTRODUCTION

In order to perform his/her job effectively, the mechanic must learn to recognize trouble that may develop in the automotive fuel system. Hard starting, missing, stalling, poor acceleration, poor performance or loss of power are but a few symptoms either totally, or in part, attributable to fuel system problems. The fuel system will usually be among the last systems worked on except when a problem points directly to this area. In this unit you will learn the technical vocabulary related to fuel systems.

PERFORMANCE OBJECTIVES

You will match 26 words used to analyze fuel systems with their definitions. Your teacher will provide a list of words and definitions. You should match at least 21 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER **only** the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER **all** rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.
6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.
7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.
8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.
9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.
10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another
11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.
12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.
13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.
2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

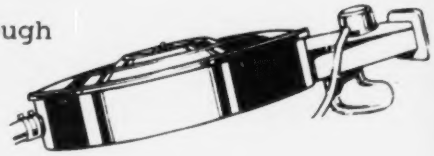
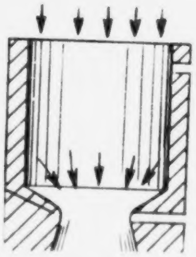
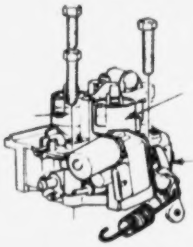
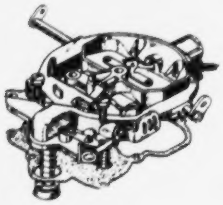
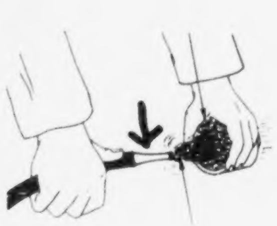
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

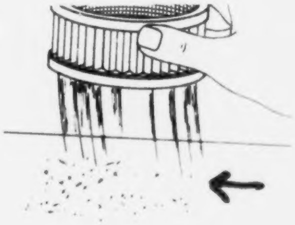
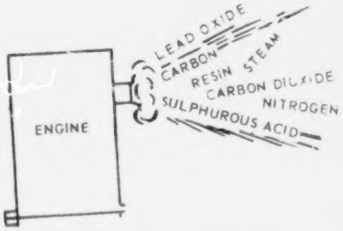
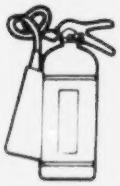
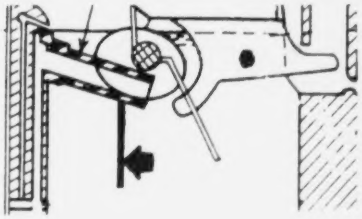
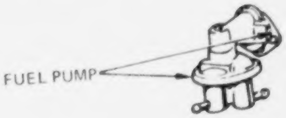
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

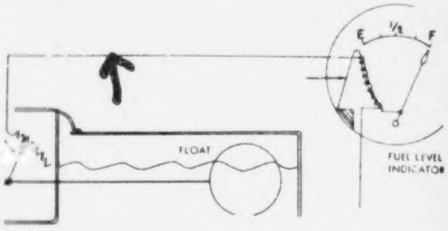
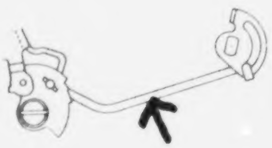
FUEL SYSTEM

air cleaner (air clean er)	a device that air moves through to take out dust and dirt	
air horn (air horn)	the top part of the carburetor where air passes through	
carburetor (car bu ret or)	a device that mixes air and fuel together for the engine	
carburetor (car bu ret or) bowl cover (bowl cov er)	the top cover of the carburetor bowl	
compressed air (com pressed air)	air that has been pressed into a smaller space	

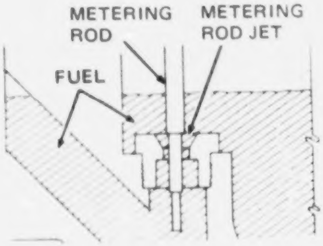
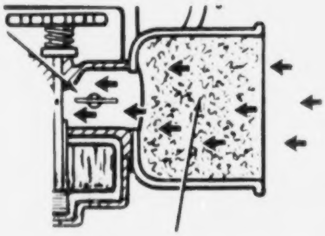
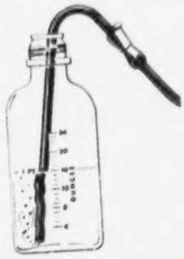
FUEL SYSTEM

contamination (con tam i na tion)	unwanted material that becomes mixed in	
emission (e mis sion)	the small particles left over from the burning fuel that are exhausted into the air	 LEAD OXIDE CARBON RESIN STEAM CARBON DIOXIDE NITROGEN SULPHUROUS ACID ENGINE
fire (fire) extinguisher (ex tin guisher)	a device that puts out fire	
float baffle (float baf fle)	thin plates in the float bowl that keep fuel from sloshing back and forth	
fuel pump (fuel pump)	a device that moves fuel from the gas tank to the carburetor	

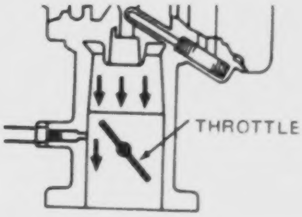
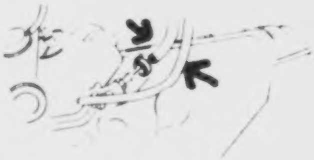
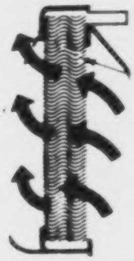
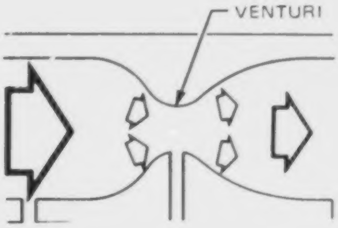
FUEL SYSTEM

fuel system (fuel sys tem)	all the parts that move the fuel	
gauge wire (gauge wire)	the wire that joins the gas tank float unit to the gas gauge	
grommet (grom met)	a soft rubber bushing that lines a hole through which something is passed	
interior (in ter ior)	inside	
link (link)	a part that joins one thing to another	

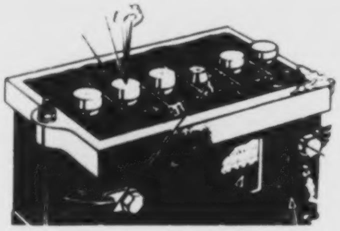
FUEL SYSTEM

metering rod (me ter ing rod)	a rod that moves to change the opening through the carburetor jet	
purge (purge)	to take out unwanted things	
rollover check (roll o ver check) valve (valve)	a device that keeps fuel from flowing to the engine if the vehicle rolls over	
syphon (sy phon)	to drain fluid out through a tube	
tachometer (ta chom eter)	a device used to show the speed of an engine in Revolutions Per Minute (RPM)	

FUEL SYSTEM

throttle plate (throt tle plate)	controls air flow in the carburetor	
vacuum hose (vac u um hose)	the hose that connects to the intake manifold which contains the vacuum	
transducer (trans duc er)	a device that controls the flow of vacuum by electricity	
ventilation (ven ti la tion)	the moving and changing of air	
venturi (ven tu ri)	the hourglass shaped throat of the carburetor	

FUEL SYSTEM

volatile (vol a tile)	a liquid that changes to a gas or vapor easily	

FUEL SYSTEM

C O M P R E S S E D A I R V O L A T I L E

F U E L P U M P S Y P H O N C O R Y J A U

U U X F G O N B U Y M E R C P T C L U N P

R I T T R A N S D U C E R I S O E T I R Z

F U E L S Y S T E M G A U G E W I R E Y B

W O T R Z Q M L I C I S P N W R L K X L F

F V F C A R B U R E T O R T C C D G I W Y

U V O W C L H B Z F Y W T E E O V J Z Y X

A I R C L E A N E R G K V T O N K L F D G

G V O G M C O N T A M I N A T I O N Y A B

G R O M M E T Q N V K O L G O J Z V Q Z B

K A I R H O R N G L F T A C H O M E T E R

C C M E T E R I N G R O D V K J K L U R S

E M I S S I O N V A P G G D E O S Z S D Y

Z C V N Q P N I Q T J J P C X F H P E G B

O G X O J U N E Z N U Y H B O O X O M T T

Z O B S F L O A T B A F F L E D L F P U W

Can you find these words?

COMPRESSED AIR
FLOAT BAFFLE
CARBURETOR
GAUGE WIRE
EMISSION
SYPHON

CONTAMINATION
AIR CLEANER
TRANSDUCER
FUEL PUMP
GROMMET

METERING ROD
TACHOMETER
FUEL SYSTEM
VOLATILE
AIR HORN

ACROSS

FUEL SYSTEM

ANSWER KEY

```
C O M P R E S S E D A I R V O L A T I L E
F U E L P U M P S Y P H O N . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . T R A N S D U C E R . . . . . . . .
F U E L S Y S T E M G A U G E W I R E . .
. . . . . . . . . . . . . . . . . . . . .
. . . C A R B U R E T O R . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
A I R C L E A N E R . . . . . . . . . . .
. . . . . C O N T A M I N A T I O N . . .
G R O M M E T . . . . . . . . . . . . . .
. A I R H O R N . . . T A C H O M E T E R
. . M E T E R I N G R O D . . . . . . . .
E M I S S I O N . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . F L O A T B A F F L E . . . . . .
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FUEL SYSTEM

T C E X F U E L P U M P D N V A C O I O A
F L O A T B A F F L E S H J C A M Y D T G
U K D Z G R O M M E T V I C Z X A W H S P
E U W A F A I R C L E A N E R X S C E Q N
L X V Y C J I T D M R G S H H K P J J B B
S Y P S H R R B A N I T C W S W D N W W L
Y F S J F C K U C O N T A M I N A T I O N
S C I E U C K U O L G A R D A Y P X G F V
T K W H C Z M W M O R C B J L X R U A P I
E M I S S I O N P N O H U U H C Q C U P W
M Q I Y Z D K A R C D O R I X D W I G A G
H X I P L A X M E W V M E W D D D R E I O
Z T R H J W O H S T O E T I N D N U W R L
N D P O J M N V S S L T O I S L U J I H L
V K D N W O S H E Y A E R I Z F M U R O K
S R D T Q E D P D H T R A N S D U C E R X
O F M E H C V M A I I N A O V K O S F N E
C F L F P H R Z I Z L Y W J K Q K O J K N
W V Y N X X B O R T E S P E O A U G T A S

Can you find these words?

COMPRESSED AIR
FLOAT BAFFLE
CARBURETOR
GAUGE WIRE
EMISSION
SYPHON

CONTAMINATION
AIR CLEANER
TRANSDUCER
FUEL PUMP
GROMMET

METERING ROD
TACHOMETER
FUEL SYSTEM
VOLATILE
AIR HORN

ACROSS/DOWN

FUEL SYSTEM

ANSWER KEY

```
. . . . F U E L P U M P . . . . . . . . .
F L O A T B A F F L E . . . . . . . . . .
U . . . G R O M M E T . . . . . . . . . .
E . . . . A I R C L E A N E R . . . . . .
L . . . . . . . . . R . . . . . . . . . .
S . . . . . . . . . I . C . . . . . . . .
Y . . . . . . . C O N T A M I N A T I O N
S . . . . . . . O . G A R . . . . . G . .
T . . . . . . . M . R C B . . . . . A . .
E M I S S I O N P . O H U . . . . . U . .
M . . Y . . . . R . D O R . . . . . G A .
. . . P . . . . E . V M E . . . . . E I .
. . . H . . . . S . O E T . . . . . W R .
. . . O . . . . S . L T O . . . . . I H .
. . . N . . . . E . A E R . . . . . R O .
. . . . . . . . D . T R A N S D U C E R .
. . . . . . . . A . I . . . . . . . . N .
. . . . . . . . I . L . . . . . . . . . .
. . . . . . . . R . E . . . . . . . . . .
```

FUEL SYSTEM

L I V N N R X Y E I R L V N O H W X Z M J

B Q A S M M L O X E I D A X S Y K C S J R

Q T U I S C I W N O O T J N Y J F X S D V

B S A I I R A A Q C V N D U E L G P Q C P

L P V C F U E L P U M P K D X K Q F V O X

V L F W H L Y S O X I E G A U R N S Q P U

A O C L C O Y F O M A I R K E R F X G N N

H J L R O O M H U W B R C C Q F N M X N F

B W I A N A M E T E R I N G R O D F O J X

B A C I T D T P T F L Q L Q H O R I A H G

N Z L R A I W B R E S S M P P Y S G U W U

S P A H M I L E A E R I Y Y C S G A M Y B

W W F O I J U E N F S S I S I W R U D O T

F X D R N T L Z S N F S B M T U O G Y W T

C C U N A G W N D T K L E X W E M E I P V

A I B C T Q U L U R O J E D C Y M W S B C

Y G M W I D E R C T P V T H A B E I O S V

G A E O O U H O E K I D Q N M I T R I E C

R N D V N Y G K R Q X C A R B U R E T O R

Can you find these words?

COMPRESSED AIR
FLOAT BAFFLE
CARBURETOR
GAUGE WIRE
EMISSION
SYPHON
CONTAMINATION
AIR CLEANER
TRANSDUCER
FUEL PUMP
GROMMET
METERING ROD
TACHOMETER
FUEL SYSTEM
VOLATILE
AIR HORN

ACROSS/DOWN/DIAGONAL

FUEL SYSTEM

ANSWER KEY

```
. . . . . . . . . . R . . . . . . . . . .
. . . . . . . . . E . . . . . . . . . . .
. T . . . . . . N . . . . . . . . . . . .
. . A . . . . A . . . . . . . . . . . . .
. . . C F U E L P U M P . . . . . . . . .
V . F . H L . . . . . . . . . . . . . . .
. O . L C O . F . . . . . . . . . . . . .
. . L R O O M . U . . . . . . . N . . N .
. . I A N A M E T E R I N G R O D . O . .
. A . I T . T P T . L . . . H . . I . . .
. . . R A I . B R E . S . P . . S G . . .
. . . H M . L . A E R . Y . . S G A . . .
. . . O I . . E N F S S . S I . R U . . .
. . . R N . . . S . F S . M T . O G . . .
. . . N A . . . D . . L E . . E M E . . .
. . . . T . . . U . . . E D . . M W . . .
. . . . I . . . C . . . . . A . E I . . .
. . . . O . . . E . . . . . . I T R . . .
. . . . N . . . R . . C A R B U R E T O R
```

AM-35-23

FUEL SYSTEM I

XX XX	XX XX	XX XX	XX XX	XX XX	1													XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	2										XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	3										XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	4	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	5								XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

1. air that has been pressed into a smaller space (2 words)
2. a device that mixes air and fuel together for the engine
3. a device that air moves through to take out dust & dirt (2 words)
5. the small particles left over from burning fuel that are sent into the air

DOWN:

1. unwanted material that becomes mixed in
4. the top part of the place where air passes through the carburetor (2 words)

FUEL SYSTEM I

ANSWER KEY

ACROSS:

1. COMPRESSEDAIR
2. CARBURETOR
3. AIRCLEANER
5. EMISSION

DOWN:

1. CONTAMINATION
4. AIRHORN

```
    C O M P R E S S E D A I R

    O

    N

    T

  C A R B U R E T O R

    M

  A I R C L E A N E R

    N

    A

    T     A

E M I S S I O N

    O     R

    N     H

          O

          R

          N
```

FUEL SYSTEM II

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	3	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	4										XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	6							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

4. all the parts that move the fuel through the vehicle (2 words)
6. a hole through which something is passed

DOWN:

1. a device that sends fuel from the gas tank to the carburetor (2 words)
3. the wire that joins the gas tank float to the gauge

FUEL SYSTEM II

ANSWER KEY

ACROSS:

4. FUELSYSTEM
6. GROMMET

DOWN:

1. FUELPUMP
3. GAUGEWIRE

							F						
					G		U						
					A		E						
				F	U	E	L	S	Y	S	T	E	M
					G		P						
					E		U						
					W		M						
					I		P						
					R								
G	R	O	M	M	E	T							

FUEL SYSTEM III

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	3	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	4											XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	5					XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

4. a rod that moves to to change the opening through the carburetor jet (2 words)
5. to take out unwanted things

DOWN:

1. inside
3. a part that joins one thing to another

FUEL SYSTEM III

ACROSS:		DOWN:	
4.	METERINGROD	1.	INTERIOR
5.	PURGE	3.	LINK

```
    I

    N         L

    T         I

  M E T E R I N G R O D

    R         K

    I

    O

P U R G E
```

FUEL SYSTEM IV

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	2	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	3				4						XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX		XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX		XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX		XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX		XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX		XX XX	XX XX
XX XX	XX XX	XX XX	5								XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

3. a device that controls vacuum by electricity
5. a liquid that changes to vapor easily

DOWN:

1. the hose that takes the air out of a space (2 words)
2. the moving and changing of air
3. a device used to show the speed of an engine in Revolutions Per Minute
4. to drain fluid out through a tube

FUEL SYSTEM IV

ANSWER KEY

ACROSS:

3. TRANSDUCER
5. VOLATILE

DOWN:

1. VACUUMHOSE
2. VENTILATION
3. TACHOMETER
4. SYPHON

									V						V	
							T	R	A	N	S	D	U	C	E	R
							A		C		Y				N	
							C		U		P				T	
							H		U		H				I	
							O		M		O				L	
							M		H		N				A	
V	O	L	A	T	I	L	E		O						T	
							T		S						I	
							E		E						O	
							R								N	

LEARNING WORDS USED IN INSPECTING EXHAUST EMISSION CONTROL SYSTEM (SPARK CONTROL)

INTRODUCTION

Another part of the emission control system is the spark control system. This device has control over the distributor vacuum advance to either retard or advance the engine timing to improve combustion and reduce the formation of oxides of nitrogen (NOx) and hydrocarbons. The unit consists of a solenoid valve which is controlled electrically by a transmission switch. The spark control system may also have a coolant temperature override switch for cold starting and drive-ability and a hot override switch which allows full engine vacuum to the distributor vacuum advance during prolonged idle conditions where the engine is likely to overheat. In this unit you will learn the technical vocabulary related to exhaust emission control system.

PERFORMANCE OBJECTIVES

You will match 22 words used in inspecting exhaust emission control systems (spark control) with their definitions. Your teacher will provide a list of words and definitions. You should match at least 18 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definitoin as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

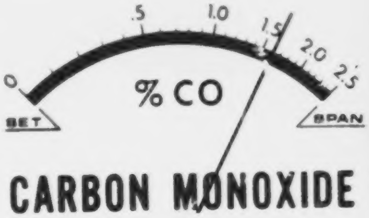
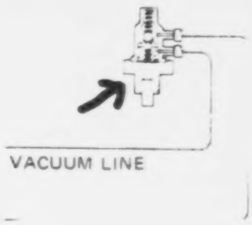
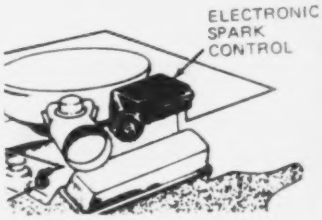
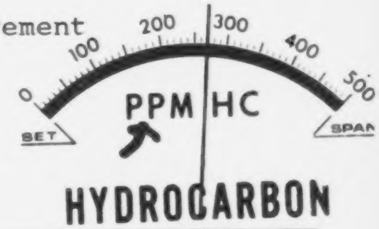
1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
4. USE the Answer Key on the back of the activity page when needed.

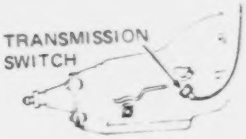
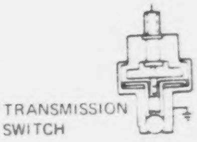
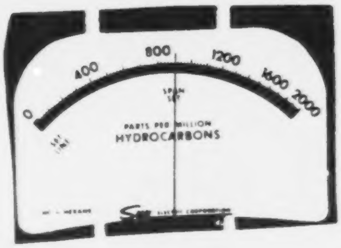
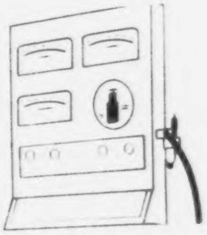
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

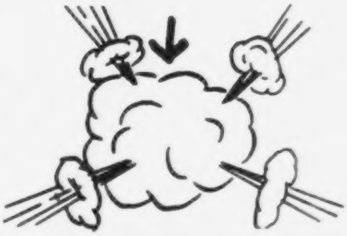
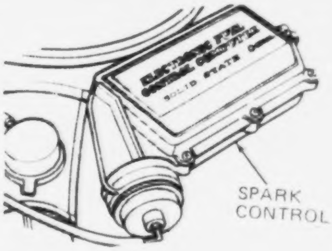
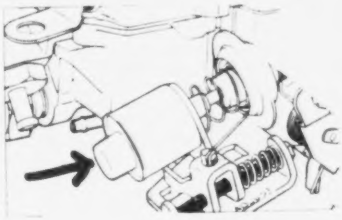
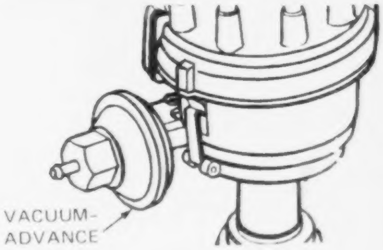
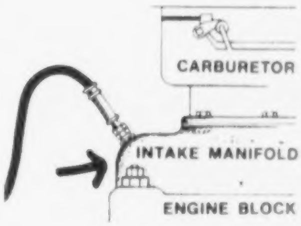
EXHAUST EMISSION CONTROL SYSTEM

CO (CO)	Carbon Monoxide -- a pollutant contained in engine exhaust gas	 0 .5 1.0 1.5 2.0 2.5 % CO SET SPAN CARBON MONOXIDE
CTO (CTO)	Cold Temperature Override -- a thermal vacuum switch which controls vacuum to other components	 VACUUM LINE
ESC (ESC)	Electronic Spark Control -- system to retard spark advance controlled electronically	 ELECTRONIC SPARK CONTROL
ppm (ppm)	Particles Per Million -- measurement of pollutants being exhausted from the engine	 0 100 200 300 400 500 PPM HC SET SPAN HYDROCARBON
RPM (RPM)	Revolutions Per Million	

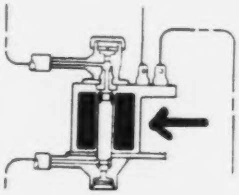
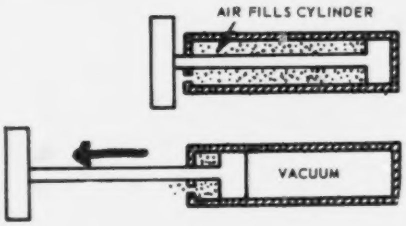
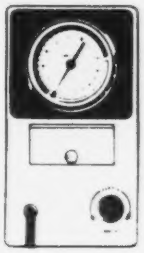
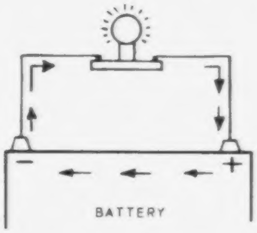
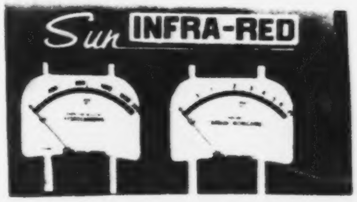
EXHAUST EMISSION CONTROL SYSTEM

TCS (TCS)	Transmission Control System -- assists in controlling pollutants exhausted from the engine	 TRANSMISSION SWITCH
TRS (TRS)	Transmission Regulated Spark -- distributor vacuum advance regulated by the transmission	 TRANSMISSION SWITCH
hydrocarbons (HC) (hy dro car bons) (HC)	mixture of hydrogen and carbon that makes up gasoline	 0 400 800 1200 1600 2000 PARTS PER MILLION HYDROCARBONS
emission (e mis sion) control system (con trol sys tem)	parts of fuel system that keep fuel vapors from going into the air	
emissions (e mis sions) analyzer (an a lyz er)	a device used to measure emissions	

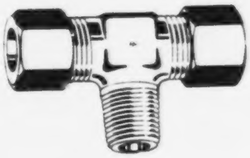
EXHAUST EMISSION CONTROL SYSTEM

combustion (com bus tion)	rapid burning of air and fuel in the combustion chamber	
spark control (spark con trol) system (sys tem)	a device used to control emissions	 SPARK CONTROL
deceleration (de cel er a tion) valve (valve)	a device that controls the slowing of the throttle to idle speed	
distributor (dis tri bu tor) vacuum advance (vac u um ad vance)	advances the time of the ignition spark to give better gas economy at cruising speed	 VACUUM- ADVANCE
manifold (man i fold) vacuum (vac u um)	vacuum in the intake manifold made by the pistons on the intake stroke	 CARBURETOR INTAKE MANIFOLD ENGINE BLOCK

EXHAUST EMISSION CONTROL SYSTEM

solenoid valve (so le noid valve)	a valve controlled by electricity	
vacuum (vac u u m)	less than atmospheric pressure	 AIR FILLS CYLINDER VACUUM
vacuum gauge (vac u um gauge)	a tool used to measure vacuum	
energized (en er gized)	charged with energy	
infra-red (in fra-red) exhaust analyzer (ex haust an a lyz er)	a device used to measure fuel emissions that go into the air from the exhaust	 Sun INFRA-RED

EXHAUST EMISSION CONTROL SYSTEM

oxides of (ox ides of) nitrogen (NOx) (ni tro gen (NOx))	nitrogen from the air joined with oxygen	
tees (tees)	a pipe fitting shaped like a tee	

EXHAUST EMISSION CONTROL

M A N I F O L D V A C U U M M Y C Y L D

C O M B U S T I O N W I S O I M B S P Y

A C S W E P T J M Q C T C S B Q D H L E

S T G U W H M C S W O C C B S T X Y Q I

U G J D S I C M A E O E R R P M B K P Z

D K Q J Y S G K I N E T I S O C T O F J

L V C R E J A B Q F V I D M C L H V V V

W B T O A T E N U Q H O M P X C P D E D

B E V Q G J L D Z N W L X U O D Z A I J

D L G K D N C O X K A H L T F F G B T I

P P M P B S B Q U Q Q F D J U D S C L Q

D E C E L E R A T I O N H Q J W W D Y F

L X H I R M Q S O L E N O I D V A L V E

I S R O W W L E P A D I T V A C U U M D

H Y D R O C A R B O N S T E E S Z U A R

V A C U U M G A U G E B N R A T R A Z C

C D L V D D N L X Y G S T R S D W J G S

Can you find these words?

MANIFOLD VACUUM
HYDROCARBONS
COMBUSTION
TEES
TRS

DECELERATION
RPM
CTO
TCS
CO

SOLENOID VALVE
VACUUM GAUGE
VACUUM
PPM

ACROSS

AM-36-16

EXHAUST EMISSION CONTROL

ANSWER KEY

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M A N I F O L D V A C U U M . . . . . .
C O M B U S T I O N . . . . . . . . . .
. . . . . . . . . . . T C S . . . . . .
. . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . R P M . . . .
. . . . . . . . . . . . . . . C T O . .
. . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . .
. . . . . . C O . . . . . . . . . . . .
P P M . . . . . . . . . . . . . . . . .
D E C E L E R A T I O N . . . . . . . .
. . . . . . . S O L E N O I D V A L V E
. . . . . . . . . . . . . V A C U U M .
H Y D R O C A R B O N S T E E S . . . .
V A C U U M G A U G E . . . . . . . . .
. . . . . . . . . . . . T R S . . . . .
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EXHAUST EMISSION CONTROL

X K L B G S A B W X F R P K P S J V G K Y

Q G I W Y D T O R B K K P W C H U F D I I

U R T N O S X V A C U U M G A U G E K K D

J S O H O O E S L D P L A T E L Y S G I F

H T Y Y T L Q Y Z G Z E N D W H T K B D W

Q X D D I E O S E I T S I B P S T R S C S

F S N R A N Y Q J B R T F Y P A C C J T X

U R T O I O Z P F D P C O M B U S T I O N

D I E C G I Y E D E C E L E R A T I O N S

Z A S A A D J C Y U J O D B P H X L Q H P

Q A J R P V A C U U M D V X M H G S U M O

Y J A B D A F U T Z V G A S E K B T O Z E

U J C O K L P A D D A K C Q W B Q U X Y W

V Y O N E V L V Y C I H U M K J B A I V F

T E E S F E S D H W T A U P W M E C Y K K

P B T Z J Z N E H S G R M J T H Z P Z O Z

Can you find these words?

MANIFOLD VACUUM
HYDROCARBONS
COMBUSTION
TEES
TRS
DECELERATION
RPM
CTO
TCS
CO
SOLENOID VALVE
VACUUM GAUGE
VACUUM
PPM

ACROSS/DOWN

EXHAUST EMISSION CONTROL

ANSWER KEY

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. . . . . . . . . . . . P . . . . . . . .
. . . . . . . . . . . . P . . . . . . . .
. . . . . S . V A C U U M G A U G E . . .
. . . H . O . . . . P L A T E . . . . . .
. . . Y . L . . . . . . N . . . . . . . .
. . . D . E . . . . . . I . . . T R S C .
. . . R . N . . . . . . F . . . C . . T .
. . . O . O . . . . . C O M B U S T I O N
. . . C . I . . D E C E L E R A T I O N .
. . . A . D . . . . . . D . P . . . . . .
. . . R . V A C U U M . V . M . . . . . .
. . . B . A . . . . . . A . . . . . . . .
. . . O . L . . . . . . C . . . . . . . .
. . . N . V . . . . . . U . . . . . . . .
T E E S . E . . . . . . U . . . . . . . .
. . . . . . . . . . . . M . . . . . . . .
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EXHAUST EMISSION CONTROL

V V K Z F F S N M L E B S M K E O N R Q Y

T A F S O R B T Y X I J J I Z F T F B S R

D E C E L E R A T I O N P A R X L Q S S W

X D E U I D P U I V A T T X J P E Q I T N

B P R S U P M S I Q R L C U I R S S O T A

L V R A P M P C O M B U S T I O N W Q Z Y

Z T A M Z Q S G I L I X N A O X U H I M F

V T E C J F S C I O E E W S W W X D J U X

K O P P U O T T L A V N N G M C U V D O B

K R E N A U B E O B K O O J S V S Z A J T

H S S C P P M W O Z B L Q I H I C F U M J

R K I F D R Q G I R J Y I K D R M K K Q V

J Q P I N G O M A N I F O L D V A C U U M

Z R F U Y A I C O U L C A W I N A Q J C Z

P A K Y V G O N E W G I L Q O O V L Y L N

T P W P S R G Z K M A E T S I E A M V R F

E D O J D H G N W E W E X Z L K E P F E O

G Y M Y S Q P O A T K V H Z Y D Y I L S V

V B H R Y E H B V Z J F M B H Z E V M Q H

Can you find these words?

MANIFOLD VACUUM
HYDROCARBONS
COMBUSTION
TEES
TRS

DECELERATION
RPM
CTO
TCS
CO

SOLENOID VALVE
VACUUM GAUGE
VACUUM
PPM

ACROSS/DOWN/DIAGONAL

EXHAUST EMISSION CONTROL

ANSWER KEY

```
V . . . . . . . . . . . . . . . . . . . .
T A . . . . . . . . . . . . . . . . . . .
D E C E L E R A T I O N . . . . . . . . .
. . E U . . P . . . . . T . . . . . . . .
. . . S U . M S . . . . C . . . . . . . .
. V R . . M . C O M B U S T I O N . . . .
. T A . . . . . . L . . . . O . . . . . .
. . . C . . . . . O E E . S . . . . . . .
. . . . U . . . . . . N N . . . . . . . .
. . . . . U . . . . . O O . . . . . . . .
. . . . P P M . . . B . . I . . . . . . .
. . . . . . . G . R . . . . D . . . . . .
. . . . . . . M A N I F O L D V A C U U M
. . . . . . . C . U . C . . . . A . . . .
. . . . . . O . . . G . . . . . . L . . .
. . . . . R . . . . . E . . . . . . V . .
. . . . D . . . . . . . . . . . . . . E .
. . . Y . . . . . . . . . . . . . . . . .
. . H . . . . . . . . . . . . . . . . . .
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EMISSION CONTROL SYSTEM I

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	2		XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	3	XX XX	XX XX	4	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	5												XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	6			XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	7		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

1. Cold Temperature Override
5. mixture of hydrogen and carbon
6. Electronic Spark Control
7. carbon monoxide

DOWN:

2. Transmission Control System
3. a fast chemical reaction between air and fuel that makes heat
4. Transmission Regulated Spark

EMISSION CONTROL SYSTEM I

ANSWER KEY

ACROSS:

1. CTO
5. HYDROCARBONS
6. ESC
7. CO

DOWN:

2. TCS
3. COMBUSTION
4. TRS

										C	T	O
				C			T				C	
H	Y	D	R	O	C	A	R	B	O	N	S	
				M			S					
				B								
				U								
			E	S	C							
				T								
				I								
			C	O								
				N								

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EMISSION CONTROL SYSTEM II

XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	2	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	3	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
4	XX XX	5	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
	XX XX		XX XX	XX XX		XX XX	6			XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
	XX XX		XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
	XX XX		XX XX	7														XX XX	XX XX	XX XX
	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

6. Revolutions Per Minute
7. vacuum in the intake manifold made by the cylinders (2 words)

DOWN:

1. a valve controlled by electricity (2 words)
2. charged with energy
3. Parts Per Million
4. no air or other things
5. T-shaped plugs

EMISSION CONTROL SYSTEM II

ACROSS:

6. RPM
7. MANIFOLDVACUUM

DOWN:

1. SOLENOIDVALVE
2. ENERGIZED
3. PPM
4. VACUUM
5. TEES

```
           S

           O

           L

           E

           N   E

           O   N   P

V   T      I   E   P

A   E      D   R P M

C   E      V   G

U   S    M A N I F O L D V A C U U M

U          L   Z

M          V   E

           E   D
```

LEARNING WORDS USED IN MAINTAINING MANIFOLD HEAT CONTROLS

INTRODUCTION

The manifold heat control valve or restriction is a device which directs hot exhaust gases around or through a passage in the intake manifold at the base of the carburetor during cold engine start or operation. Most heat control valves are either a part of the exhaust manifold or are a separate unit fastened between the eshaust manifold and the exhaust pipe for the engine. The unit consists of an off-center valve plate, shaft, counterweight, and a thermostatic spring. In this unit you will learn the technical vocabulary related to manifold heat controls.

PERFORMANCE OBJECTIVES

You will match 14 words used in maintaining manifold heat controls with their definitions. Your teacher will provide a list of words and definitions. You should match at least 11 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER **only** the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER **all** rows of words, definitions, and pictures except **one**. LOOK AT the word, definition, and picture. LISTEN to the definitoin as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

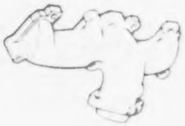
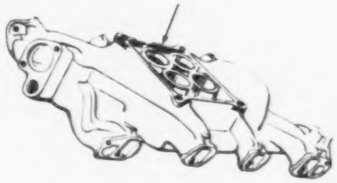
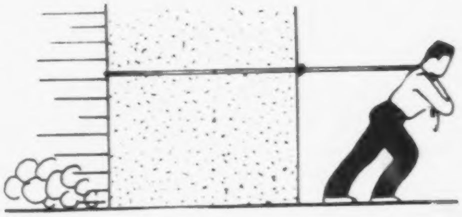
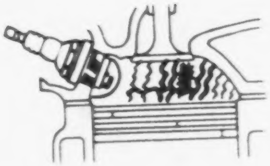
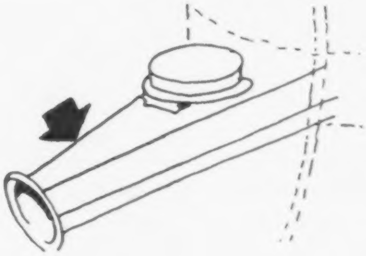
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

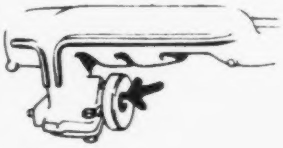
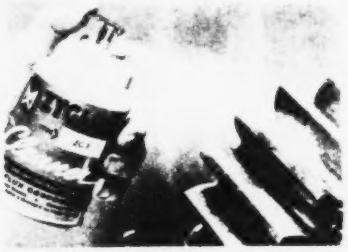
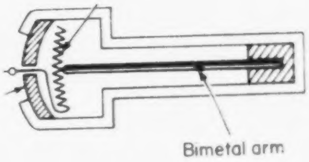
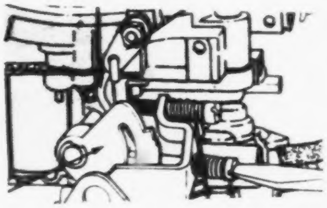
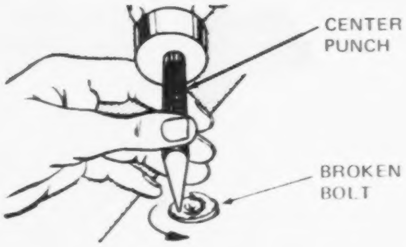
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

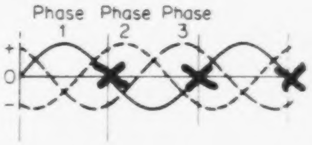
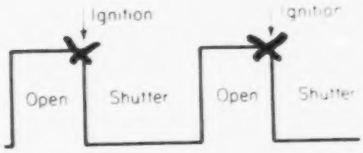
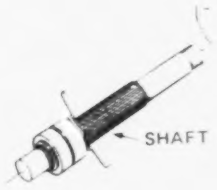
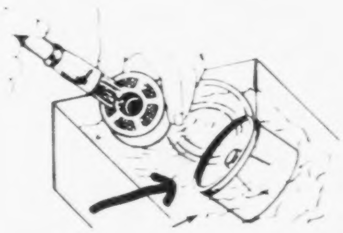
MANIFOLD HEAT CONTROLS

exhaust (ex haust) manifold (man i fold)	a unit that collects the exhaust from the cylinders and send it out the exhaust pipe	
intake (in take) manifold (man i fold)	distributes the fuel mixture from the carburetor into the intake valves	
accelerate (ac cel er ate)	to increase the speed	
detonation (de ton a tion)	uncontrolled burning in the cylinder	
snorkel (snork el)	a long intake tube on the air cleaner	

MANIFOLD HEAT CONTROLS

heat raiser (heat rais er) valve (valve)	a valve in the exhaust manifold that directs heat to the intake manifold	
aerosol (aer o sol)	a gas under pressure in a spray can	
bimetallic (bi me tal lic)	two metals welded together that change with temperature	
counterweight (count er weight)	weight put on the carburetor shaft to control the movement	
frozen (froz en)	stuck	

MANIFOLD HEAT CONTROLS

interval (in ter val)	time between events	 Phase 1 Phase 2 Phase 3 + 0 -
periodic (per i od ic)	taking place at regular times	 Ignition Ignition Open Shutter Open Shutter
shaft (shaft)	long rod that supports a turning part	
solvent (sol vent)	a liquid that can dissolve something	

MANIFOLD HEAT CONTROLS

H E A T R A I S E R V A L V E F R O Z E N
C O U N T E R W E I G H T S O L V E N T P
X C X I N T E R V A L I S E L R F T I R A
A L S X A F F H Q S Y J S N D C T T F Q J
R F T A A Q B H N Q G Y O C U U O K W V G
F T B R C G H T B I M E T A L L I C Z W J
E D I K N R K P C Z J Q E R R I L H H X G
W D E T O N A T I O N T R V I X X I N F V
V F B I J O J V K P G A X S H A F T M P N
T U B A C C E L E R A T E S X T J X B U D
W W P W X Y E Q E Z W Z E Y E E A K O E V
J Q E R O P E R I O D I C S N O R K E L G
E X H A U S T M A N I F O L D A N O H U L
Y O P V G V J I N T A K E M A N I F O L D
K E T G K U L O B Y D W J C N Y A O O J D
Y R T Q K L U F Y Y F R T I E M X N Y I X
C S S S Y A X C F Q U K C H G G R Q R U R
A E R O S O L G F Q I Y J R U O C V B G U

Can you find these words?

HEAT RAISER VALVE
COUNTERWEIGHT
ACCELERATE
SOLVENT
FROZEN

EXHAUST MANIFOLD
DETONATION
PERIODIC
SNORKEL
SHAFT

INTAKE MANIFOLD
BIMETALLIC
INTERVAL
AEROSOL

ACROSS

MANIFOLD HEAT CONTROLS

ANSWER KEY

```
H E A T R A I S E R V A L V E F R O Z E N
C O U N T E R W E I G H T S O L V E N T .
. . . I N T E R V A L . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . B I M E T A L L I C . . .
. . . . . . . . . . . . . . . . . . . . .
. D E T O N A T I O N . . . . . . . . . .
. . . . . . . . . . . . . S H A F T . . .
. . . A C C E L E R A T E . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . P E R I O D I C S N O R K E L .
E X H A U S T M A N I F O L D . . . . . .
. . . . . . . I N T A K E M A N I F O L D
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
A E R O S O L . . . . . . . . . . . . . .
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MANIFOLD HEAT CONTROLS

V	Q	B	X	A	C	I	M	P	S	H	A	F	T	E	S	K	C	N	G	L
Q	S	G	A	O	Z	G	U	B	I	M	E	T	A	L	L	I	C	Q	P	K
H	M	D	B	C	P	T	K	S	N	C	R	E	M	B	C	K	U	F	G	V
W	I	A	Q	H	G	T	P	V	T	O	O	X	Y	P	E	Q	L	C	M	R
Z	Q	R	B	U	W	E	X	H	A	U	S	T	M	A	N	I	F	O	L	D
O	W	B	Q	U	N	A	M	E	K	N	O	B	R	L	B	Q	T	G	B	Q
Z	Q	K	Y	Q	B	Y	Z	A	E	T	L	A	Q	S	L	J	V	N	S	Z
A	B	V	F	E	C	Z	S	T	M	E	V	Z	L	P	E	Q	J	Y	S	Y
R	W	G	R	R	U	K	S	R	A	R	B	U	D	G	P	E	T	F	O	M
Y	P	N	A	H	P	F	T	A	N	W	P	N	C	S	I	Q	T	X	N	S
I	V	Z	P	R	G	D	K	I	I	E	N	S	Y	I	Y	K	T	U	I	S
I	N	T	E	R	V	A	L	S	F	I	C	O	S	K	Y	E	T	C	P	Y
Y	E	C	R	F	L	T	P	E	O	G	P	L	N	W	N	R	N	C	J	Y
V	P	Q	I	L	D	T	C	R	L	H	S	V	O	N	A	Y	M	B	U	O
O	A	T	O	T	R	F	D	V	D	T	P	E	R	S	B	P	R	V	Y	I
U	E	R	D	E	T	O	N	A	T	I	O	N	K	U	P	E	I	R	B	N
S	J	G	I	A	C	C	E	L	E	R	A	T	E	Z	W	E	H	C	G	X
B	A	D	C	Y	C	P	S	V	I	W	X	P	L	G	S	O	P	B	V	L
D	C	T	E	F	R	O	Z	E	N	F	K	E	P	N	T	J	Q	E	Z	Z

Can you find these words?

HEAT RAISER VALVE
COUNTERWEIGHT
ACCELERATE
SOLVENT
FROZEN

EXHAUST MANIFOLD
DETONATION
PERIODIC
SNORKEL
SHAFT

INTAKE MANIFOLD
BIMETALLIC
INTERVAL
AEROSOL

ACROSS/DOWN

MANIFOLD HEAT CONTROLS

ANSWER KEY

```
. . . . . . . . . S H A F T . . . . . . .
. . . . . . . . B I M E T A L L I C . . .
. . . . . . . . . N C R . . . . . . . . .
. . . . . . . . . T O O . . . . . . . . .
. . . . . . E X H A U S T M A N I F O L D
. . . . . . . . E K N O . . . . . . . . .
. . . . . . . . A E T L . . . . . . . . .
. . . . . . . . T M E . . . . . . . . . .
. . . . . . . . R A R . . . . . . . . . .
. . . . . . . . A N W . . . . . . . . . .
. . . P . . . . I I E . S . . . . . . . .
I N T E R V A L S F I . O S . . . . . . .
. . . R . . . . E O G . L N . . . . . . .
. . . I . . . . R L H . V O . . . . . . .
. . . O . . . . V D T . E R . . . . . . .
. . . D E T O N A T I O N K . . . . . . .
. . . I A C C E L E R A T E . . . . . . .
. . . C . . . . V . . . . L . . . . . . .
. . . . F R O Z E N . . . . . . . . . . .
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MANIFOLD HEAT CONTROLS

J	S	I	I	K	B	A	D	L	F	Z	P	R	P	V	A	V	C	X	R	D
C	O	U	N	T	E	R	W	E	I	G	H	T	Q	F	U	A	H	M	O	C
F	L	H	T	T	X	C	T	N	H	B	D	R	N	G	P	M	W	V	K	Q
P	V	C	E	E	A	A	D	O	A	V	A	P	I	V	S	J	D	J	W	M
W	E	B	R	J	X	K	P	E	R	I	O	D	I	C	A	S	G	C	Y	H
I	N	T	V	W	H	H	E	A	T	R	A	I	S	E	R	V	A	L	V	E
F	T	G	A	Q	L	F	A	M	B	O	B	C	H	N	K	B	X	V	Q	W
C	D	C	L	Z	L	P	E	U	A	G	N	Q	C	S	O	Y	J	H	T	T
W	X	M	X	Z	T	L	R	I	S	N	B	A	R	E	H	R	B	D	T	L
S	Y	I	A	A	B	V	O	P	U	T	I	T	T	S	L	A	K	N	D	R
E	S	I	L	B	F	O	S	U	F	Z	M	F	B	I	D	E	F	E	Q	D
I	B	Z	V	D	P	Q	O	U	P	B	E	A	O	A	O	U	R	T	L	E
Y	U	Y	L	N	P	H	L	H	L	S	T	I	N	L	R	N	O	A	R	N
N	T	X	I	U	Z	I	B	O	D	N	A	M	X	I	D	J	Z	U	T	R
X	L	K	S	Y	B	L	Z	L	J	T	L	B	Y	O	F	F	E	D	K	E
Y	B	K	T	G	F	A	M	I	P	H	L	N	T	J	D	O	N	G	A	C
F	U	U	M	T	Y	L	X	Z	V	P	I	V	O	Z	W	O	L	H	W	U
H	H	G	W	S	P	I	Z	H	X	S	C	F	C	I	C	Z	I	D	R	Q

Can you find these words?

HEAT RAISER VALVE
COUNTERWEIGHT
ACCELERATE
SOLVENT
FROZEN
EXHAUST MANIFOLD
DETONATION
PERIODIC
SNORKEL
SHAFT
INTAKE MANIFOLD
BIMETALLIC
INTERVAL
AEROSOL

ACROSS/DOWN/DIAGONAL

AM-37-16

MANIFOLD HEAT CONTROLS

ANSWER KEY

```
. S I I . . . . . . . . . . . . . . . . .
C O U N T E R W E I G H T . . . . . . . .
. L . T T . . . . . . . . . . . . . . . .
. V . E E A . D . . . . . . . . . . . . .
. E . R . X K P E R I O D I C . . . . . .
. N . V . . H E A T R A I S E R V A L V E
. T . A . . . A M . O . C . N . . . . . .
. . . L . . . E U A . N . C S O . . . . .
. . . . . . . R . S N B A . E H R . . . .
. . . . . . . O . . T I . T . L A K . . .
. . . . . . . S . . . M F . I . E F E . .
. . . . . . . O . . . E A O . O . R T L .
. . . . . . . L . . . T . N L . N O A . .
. . . . . . . . . . . A . . I D . Z . T .
. . . . . . . . . . . L . . . F . E . . E
. . . . . . . . . . . L . . . . O N . . .
. . . . . . . . . . . I . . . . . L . . .
. . . . . . . . . . . C . . . . . . D . .
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MANIFOLD HEAT CONTROLS I

XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	2	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	3														XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	4	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	5										XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	6							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

3. tubes that distribute the air and fuel mixture from the carburetor to the intake valve (2 words)
5. to increase the speed of something
6. a long rod that supports a turning point

DOWN:

1. uncontrolled burning in the cylinder
2. two metals that change as temperature changes
4. a gas under pressure in a spray can

AM-37-18

MANIFOLD HEAT CONTROLS I

ANSWER KEY

ACROSS:		DOWN:	
3.	INTAKEMANIFOLD	1.	DETONATION
5.	ACCELERATE	2.	BIMETALLIC
6.	SNORKEL	4.	AEROSOL

```
    D

B   E

I N T A K E M A N I F O L D

M   O

E   N     A

T   A C C E L E R A T E

A   T     R

L   I     O

L   O     S N O R K E L

I   N     O

C         L
```

MANIFOLD HEAT CONTROLS II

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	2								XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	3	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	4						XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	5													XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	6					XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. time between events
4. stuck
5. weights put on the carburetor to control movement of a shaft
6. long rod that supports a turning part

DOWN:

1. taking place at regular times
3. a liquid that dissolves something

MANIFOLD HEAT CONTROLS II

ANSWER KEY

ACROSS:		DOWN:	
2.	INTERVAL	1.	PERIODIC
4.	FROZEN	3.	SOLVENT
5.	COUNTERWEIGHT		
6.	SHAFT		

```
      P
I N T E R V A L
      R
      I         S
      O     F R O Z E N
      D         L
      I         V
      C O U N T E R W E I G H T
                N
        S H A F T
```

LEARNING WORDS USED IN CLEANING AND FLUSHING A COOLING SYSTEM

INTRODUCTION

A rusty appearance and a foaming condition of the coolant in a modern automobile engine are generally indications of a cooling system problem which must be corrected before serious damage results. In a previous unit you learned how to use the Stant or similar tester to make a cooling system pressure test to determine any possible external leaks in the system. In this unit you will learn the technical vocabulary related to cleaning and flushing a cooling system.

PERFORMANCE OBJECTIVES

You will match 16 words used in cleaning and flushing cooling systems with their definitions. Your teacher will provide a list of words and definitions. You should match at least 13 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.

2. COVER **only** the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER **all** rows of words, definitions, and pictures except **one**. LOOK AT the word, definition, and picture. LISTEN to the definitoin as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

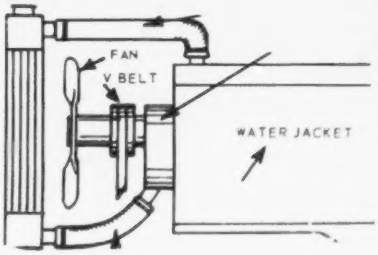
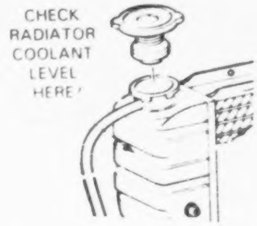
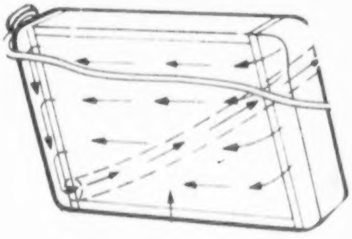
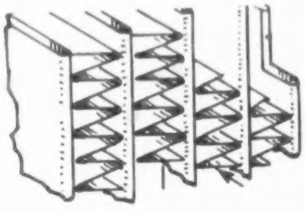
2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
4. USE the Answer Key on the back of the activity page when needed.

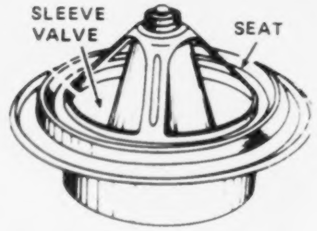
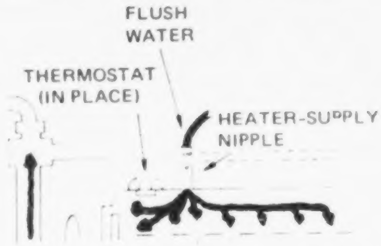
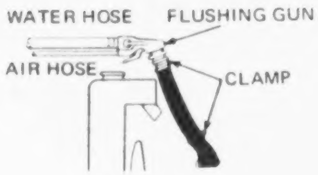
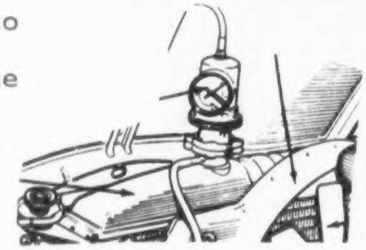
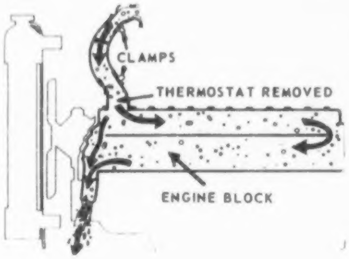
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

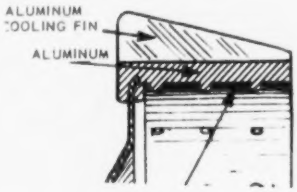
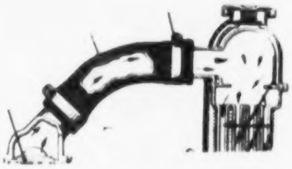
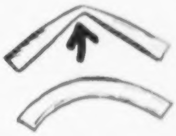
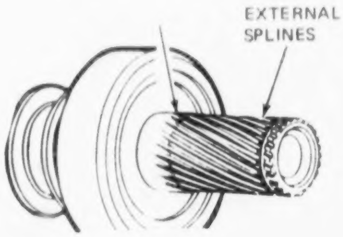
COOLING SYSTEM

cooling system (cool ing sys tem)	all the parts, along with air and water, used to remove heat from the engine	 FAN V BELT WATER JACKET
coolant (cool ant)	liquid used for cooling	 CHECK RADIATOR COOLANT LEVEL HERE!
antifreeze (an ti freeze)	liquid added to coolant to prevent freezing in cold weather	For year 'round trouble-free cooling... PRESTONE get a fresh fill today
radiator (ra di at or)	a device used to transfer heat from engine coolant to the air	
radiator fins (ra di at or fins)	thin metal surface used to radiate heat from metal to air	

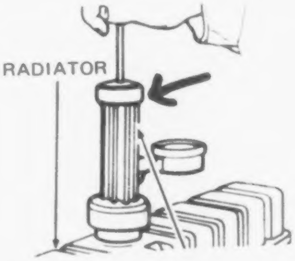
COOLING SYSTEM

thermostat (therm o stat)	a device that is used to control the flow of coolant to regulate the temperature	 SLEEVE VALVE SEAT
flush (flush)	to clean with a strong flow of water	 FLUSH WATER THERMOSTAT (IN PLACE) HEATER-SUPPLY NIPPLE
flushing gun cone (flush ing gun cone)	a part on the air hose to flush radiator	 WATER HOSE FLUSHING GUN AIR HOSE CLAMP
pressure (pres sure) flushing (flush ing)	using an air pressure gun to increase water moving in the radiator	
reverse (re verse) flushing (flush ing)	flushing in the opposite direction of normal coolant flow	 CLAMPS THERMOSTAT REMOVED ENGINE BLOCK

COOLING SYSTEM

operating (op er at ing)	working	
aluminum (al u min um)	a soft metal	 ALUMINUM COOLING FIN ALUMINUM
engine inlet (en gine in let) hose (hose)	a hose that goes into the water pump to the engine	
excessive (ex cess ive)	too much	
external (ex tern al)	outside	 EXTERNAL SPLINES

COOLING SYSTEM

stant tester (stant tes ter)	a device used to pressure test a cooling system for leaks	

COOLING SYSTEM

R	E	V	E	R	S	E	F	L	U	S	H	I	N	G	G	K	K	U	I	O
E	N	G	I	N	E	I	N	L	E	T	H	O	S	E	J	N	Y	B	Z	A
T	H	E	R	M	O	S	T	A	T	R	A	D	I	A	T	O	R	L	L	R
A	L	U	M	I	N	U	M	D	L	A	G		B	F	J	L	S	Z	K	F
A	G	V	D	M	C	S	T	A	N	T	U	F	S	Z	L	U	R	Y	X	I
Y	S	S	Y	J	N	L	Q	E	X	C	E	S	S	I	V	E	X	G	B	Z
C	O	O	L	A	N	T	G	Z	V	D	F	Q	N	Y	C	L	M	R	B	K
F	V	X	I	F	I	O	J	L	A	R	R	Y	J	N	R	S	V	X	U	T
L	Y	D	Z	O	M	P	J	Q	L	U	X	G	U	W	E	L	M	W	J	I
I	S	O	D	I	A	W	Y	G	H	S	O	E	P	C	J	I	U	I	S	B
C	O	O	L	I	N	G	S	Y	S	T	E	M	A	A	R	R	Y	C	Y	K
H	P	W	L	P	D	U	M	U	U	Z	T	U	D	H	Z	F	K	O	O	J
E	O	Z	C	D	C	Y	R	U	I	D	R	A	Q	R	K	P	E	K	P	X
V	I	E	F	H	N	W	G	O	G	N	S	Z	F	L	F	E	S	W	S	I
A	Q	L	G	A	Q	S	V	Z	M	F	D	D	X	D	Y	I	J	M	L	L
I	A	Z	N	A	N	T	I	F	R	E	E	Z	E	B	I	Q	A	T	X	B
O	P	E	R	A	T	I	N	G	B	U	Y	Y	H	D	D	K	C	D	L	I
F	L	U	S	H	X	F	L	U	S	H	I	N	G	G	U	N	C	O	N	E
R	A	D	I	A	T	O	R	F	I	N	S	A	X	D	O	M	B	N	U	S

Can you find these words?

REVERSE FLUSHING
THERMOSTAT
EXCESSIVE
COOLANT
STANT
FLUSHING GUN CONE
COOLING SYSTEM
ANTIFREEZE
RADIATOR
FLUSH
ENGINE INLET HOSE
RADIATOR FINS
OPERATING
ALUMINUM

ACROSS

AM-38-14

COOLING SYSTEM

ANSWER KEY

```
R E V E R S E F L U S H I N G . . . . . .
E N G I N E I N L E T H O S E . . . . . .
T H E R M O S T A T R A D I A T O R . . .
A L U M I N U M . . . . . . . . . . . . .
. . . . . . S T A N T . . . . . . . . . .
. . . . . . . . E X C E S S I V E . . . .
C O O L A N T . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
C O O L I N G S Y S T E M . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . A N T I F R E E Z E . . . . . . .
O P E R A T I N G . . . . . . . . . . . .
F L U S H . F L U S H I N G G U N C O N E
R A D I A T O R F I N S . . . . . . . . .
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COOLING SYSTEM

V I Q K N Z Z N I C Y Y L Y R P Y X A J

F L U S H I N G G U N C O N E G G K X I

F N E X C E S S I V E K H O V L C Y J X

V C R K O E N G I N E I N L E T H O S E

K Y S H O X Z D L C W W D U R H S O D S

R K O S L E I B A E I W H O S E I S R G

I R A D I A T O R F I N S P E R A A H I

R G L A N T I F R E E Z E E F M H Q I V

H V U G G D M F A A N T Z R L O X Z R X

Y T M S S W S B D S T B I A U S Q A P O

M C I L Y C D G I S T A N T S T O H W O

J B N F S X S J A P S G I I H A T W P V

O Q U S T A R Y T F X F I N I T T J R K

O N M I E O C O O L A N T G N I S O F N

W X T H M P G I R U C E K Q G K O Q H P

K T T N W J U H A S P D K G P U H H X U

C I L S Q R M M D H E G M W A W X W S V

Can you find these words?

REVERSE FLUSHING
THERMOSTAT
EXCESSIVE
COOLANT
STANT
FLUSHING GUN CONE
COOLING SYSTEM
ANTIFREEZE
RADIATOR
FLUSH
ENGINE INLET HOSE
RADIATOR FINS
OPERATING
ALUMINUM

ACROSS/DOWN

COOLING SYSTEM

ANSWER KEY

```
. . . . . . . . . . . . . . R . . . . .
F L U S H I N G G U N C O N E . . . . .
. . E X C E S S I V E . . . V . . . . .
. . . . O E N G I N E I N L E T H O S E
. . . . O . . . . . . . . . R H . . . .
. . . . L . . . . . . . . O S E . . . .
. R A D I A T O R F I N S P E R . . . .
. . L A N T I F R E E Z E E F M . . . .
. . U . G . . . A . . . . R L O . . . .
. . M . S . . . D . . . . A U S . . . .
. . I . Y . . . I S T A N T S T . . . .
. . N . S . . . A . . . . I H A . . . .
. . U . T . . . T F . . . N I T . . . .
. . M . E . C O O L A N T G N . . . . .
. . . . M . . . R U . . . . G . . . . .
. . . . . . . . . S . . . . . . . . . .
. . . . . . . . . H . . . . . . . . . .
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AM-38-17

COOLING SYSTEM

O K F W H P P H H P M K I N S T N C X U C

U R X P R U S S L M L M C U C Q B Q U A I

Q R Y E D A U C U C N H A X C Q L D Z N F

U N R E V L B N E O Q V X Y O P R V J A B

K A R Z F U I V W O G G D H O E T S E O C

U X W G L M I Q K L X Q V W L N V S N D Q

Q I B Y U S J R G I G V N H A C O K B K Y

T O S L S V L A A N Z I C T N H P Q B U J

Q I A E H Y O D X G I V S R T V U Y K D K

G D C N I D P I U S X T H E R M O S T A T

Z X H H N X E A W Y F N L Z H U E Q L C W

E T U R G W R T E S A N T I F R E E Z E C

H S X A G L A O D T I C Q Z D S W M S K B

T K W D U O T R I E O S I C A I Y O S D I

U N M I N X I F N M X N Z Z V L K L U Z D

S B G A C B N I G J E S S K I B L F T V E

Z K S T O E G N C W P L X W M Q K A J O L

Z H Y O N N Q S U F E R J X K A G X K K D

M J E R E V E R S E F L U S H I N G C T I

Can you find these words?

REVERSE FLUSHING
THERMOSTAT
EXCESSIVE
COOLANT
STANT

FLUSHING GUN CONE
COOLING SYSTEM
ANTIFREEZE
RADIATOR
FLUSH

ENGINE INLET HOSE
RADIATOR FINS
OPERATING
ALUMINUM

ACROSS/DOWN/DIAGONAL

COOLING SYSTEM

ANSWER KEY

```
. . . . . . . . H . . . . . . . . . . . .
. . . . . . . S . M . . . . . . . . . . .
. . . . . . U . U C . . . . C . . . . . .
. . . . . L . N E O . . . . O . . . . . .
. . . . F . I V . O . . . . O . T . . . .
. . . . L M I . . L . . . . L N . S . . .
. . . . U S . R . I . . . . A . O . . . .
. . . L S . . A . N . . . T N H . . . . .
. . A E H . O D . G . . S . T . . . . . .
. . C . I . P I . S . T H E R M O S T A T
. X . . N . E A . Y . . L . . . . . . . .
E . . R G . R T . S A N T I F R E E Z E .
. . . A G . A O . T I . . . . . . . . . .
. . . D U . T R . E . . . . . . . . . . .
. . . I N . I F N M . . . . . . . . . . .
. . . A C . N I . . . . . . . . . . . . .
. . . T O . G N . . . . . . . . . . . . .
. . . O N N . S . . . . . . . . . . . . .
. . . R E V E R S E F L U S H I N G . . .
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AM-38-19

FLUSHING COOLING SYSTEM I

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1		2								XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	3								4				XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	5								XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	6							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

1. liquid added to cooling system to keep coolant from freezing in cold weather
3. thin metal surface used to transfer heat between metal and air (2 words)
5. a device used to transfer heat from engine coolant to the air
6. liquid used for cooling

DOWN:

2. a device that is used to control the flow of coolant as the temperature changes
4. to clean with a strong flow of water

FLUSHING COOLING SYSTEM I

ANSWER KEY

ACROSS:		DOWN:	
1.	ANTIFREEZE	2.	THERMOSTAT
3.	RADIATORFINS	4.	FLUSH
5.	RADIATOR		
6.	COOLANT		

```
        A N T I F R E E Z E
            H
            E
            R A D I A T O R F I N S
            M               L
R A D I A T O R             U
            S               S
C O O L A N T               H
            A
            T
```

FLUSHING COOLING SYSTEM II

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	2									XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	3		4							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	5								XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	6					XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. too much
3. working
5. a soft metal
6. a device used to test pressure

DOWN:

4. outside

FLUSHING COOLING SYSTEM II

ANSWER KEY

ACROSS:		DOWN:	
2.	EXCESSIVE	4.	EXTERNAL
3.	OPERATING		
5.	ALUMINUM		
6.	STANT		

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        E X C E S S I V E


O P E R A T I N G
    X
    T   A L U M I N U M
    E
    R
    N
    A   S T A N T
    L
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LEARNING WORDS USED IN REMOVING ENGINE AND REPLACING MOUNTS

INTRODUCTION

Although the automobile engine is within an area which is considered to be "sprung weight," road shock and vibrations, unless dampened additionally, may cause metal strain and fatique within many parts of the engine accessories and mounting points, causing them to break, with resulting damage to other components of the vehicle. To prevent or reduce metal fatique and breakage, motor mounts are installed on the engine at three locations. The mountings generally consist of heavy gauge pressed steel fasteners separated by a thick layer of rubber or neoprene moulding the metal parts together into a three-layer sandwich. When motor mounts break or become too pliable, the engine can twist within the engine compartment during acceleration, and may cause damage to other areas. In this unit you will learn the technical vocabulary related to removing engine and replacing mounts.

PERFORMANCE OBJECTIVES

You will match 11 words used in removing engines and replacing mounts with their definitions. Your teacher will provide a list of words and definitions. You should match at least 9 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definitoin as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on th page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

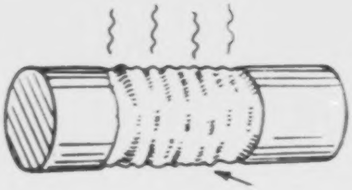
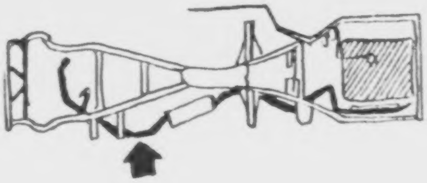
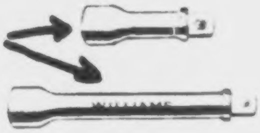
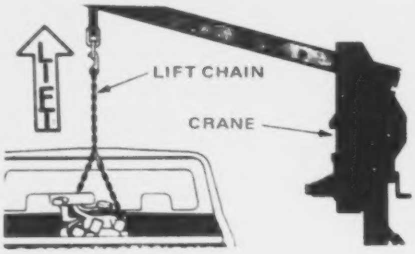
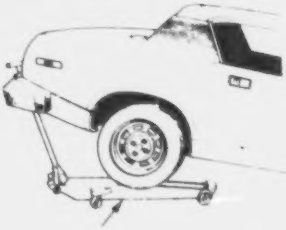
1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.
4. USE the Answer Key on the back of the activity page when needed.

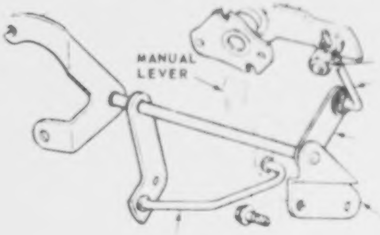
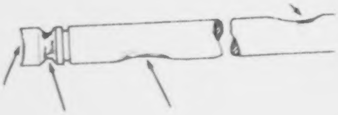
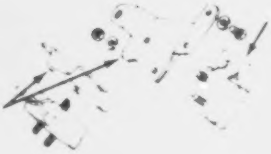
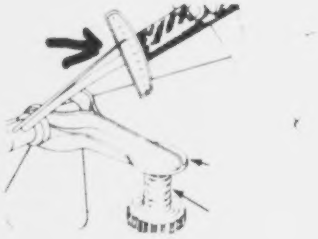
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

REMOVING ENGINE AND REPLACING MOUNTS

chafe marks (chafe marks)	signs that heat or wearing away have removed the finish	
exhaust pipe (ex haust pipe)	the pipe that joins the exhaust manifold to the muffler	
extension (ex ten tion)	an added part	
hoist (hoist)	a device used to lift heavy things	
hydraulic jack (hy draul ic jack)	a device for lifting that works by liquid under pressure	

REMOVING ENGINE AND REPLACING MOUNTS

linkages (link ag es)	rods that transfer movement from one unit to another	
metal fatigue (met al fa tigue)	the breaking down of metal due to strong motion, twisting, or bending	
motor mounts (mo tor mounts)	parts that hold the motor in place and cushion vibration	
neoprene (ne o prene)	a plastic that is like rubber	
torque (torque) specifications (spec i fi ca tions)	the amount of tightness	

REMOVING ENGINE AND REPLACING MOUNTS

vibration (vi bra tion)	rapid moving back and forth caused by an out of balance condition

REMOVE ENGINE

H Y D R A U L I C J A C K V J K X A L S M

K B M Z I O E I T K O W P M C X F Q R J H

R I U M H E S O D U J W L J A R S E K Q R

Y J M O T O R M O U N T S Y U Q J P X S Z

N E O P R E N E L I N K A G E S J S L M Y

V I B R A T I O N E X T E N S I O N E Q S

G R P I J L V J Q I R T O P K N T V U I Q

F S G I G U I D S M E T A L F A T I G U E

B A I H J C L F E D R N V B W G O P K T R

I H F K D J P X S U L C S M E A D N E D A

E X H A U S T P I P E T E Y E M J A U A B

E D J U H W G S M Y P P A Q K E V Y Y Z S

J U R K P S L T E V F K O P M I N M K V O

C S E S J W H R K R F F V I I D S P R D A

U P D M L A U H U O D M S O Q C W H B J P

W M C H S V T P U G P X I N O T Z T Q Q Z

Y N I W Q P G Z B Y I N L N Q L Y V G D K

J L Q Y H X F Y Z C X P A G G U X N L G Y

C H A F E M A R K S I D O W O D I N T B P

Can you find these words?

HYDRAULIC JACK
EXHAUST PIPE
EXTENSION
METAL FATIGUE
CHAFE MARKS
NEOPRENE
MOTOR MOUNTS
VIBRATION
LINKAGE

ACROSS

REMOVE ENGINE

ANSWER KEY

```
H Y D R A U L I C J A C K . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . M O T O R M O U N T S . . . . . . . .
N E O P R E N E L I N K A G E S . . . . .
V I B R A T I O N E X T E N S I O N . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . M E T A L F A T I G U E
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
E X H A U S T P I P E . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
C H A F E M A R K S . . . . . . . . . . .
```

REMOVE ENGINE

P R L P Q U H M K Y S Z L E X P C K
H Y M U X F V L H X S L I B X K W Y
B D H E M X W H K I G T N M E T M N
Z X I I D Z X S A U Z U K G M K S C
X H B W L F E W M S X N A Q L G K H
T N R X R H M B Q R N S G N O E X A
W T E D T V O M T J Z T E B L I M F
J R U L K L T E X H A U S T P I P E
Z F R Z T C O T F Z V X H E A L H M
M V C H Y D R A U L I C J A C K V A
H N M I W D M L P C B Y W Q B C C R
N L L I V Q O F V H R T X G Y H K K
G P Z O M A U A M E A Q N G V K L S
C X L I S M N T Q N T W N B F J V Q
T K Z I L M T I A L I Z V M D A A R
H F G A O I S G E O O U Z L G J T K
V D L M R Q S U P J N J V W S B T C
N E O P R E N E X T E N S I O N Z R

Can you find these words?

HYDRAULIC JACK
EXHAUST PIPE
EXTENSION
METAL FATIGUE
CHAFE MARKS
NEOPRENE
MOTOR MOUNTS
VIBRATION
LINKAGE

ACROSS/DOWN

REMOVE ENGINE

ANSWER KEY

```
. . . . . . . . . . . . L . . . . .
. . . . . . . . . . . . I . . . . .
. . . . . . . . . . . . N . . . . .
. . . . . . . . . . . . K . . . . C
. . . . . . . . . . . . A . . . . H
. . . . . . M . . . . . G . . . . A
. . . . . . O M . . . . E . . . . F
. . . . . . T E X H A U S T P I P E
. . . . . . O T . . V . . . . . . M
. . . H Y D R A U L I C J A C K . A
. . . . . . M L . . B . . . . . . R
. . . . . . O F . . R . . . . . . K
. . . . . . U A . . A . . . . . . S
. . . . . . N T . . T . . . . . . .
. . . . . . T I . . I . . . . . . .
. . . . . . S G . . O . . . . . . .
. . . . . . . U . . N . . . . . . .
N E O P R E N E X T E N S I O N . .
```

REMOVE ENGINE

N U X S A G S C Y N L G D I L J V
E X H A U S T P I P E Q W O B J G
O L Z Y V L M O T O R M O U N T S
P U C K D Z E X T E N S I O N V M
R V D H F R T X X V N P C S I Z G
E J Y B C H A F E M A R K S W H E
N J D W J O L U K T D T X N P P M
E R W Q G B F W L V N G J R A D C
W S R B N C A I L I N K A G E S X
C S Q L Y D T I W B C L Y N M L P
A W J T H D I O U R W J O J M D A
H I I F Z M G O A A Y A A J B J O
N X I P M B U O N T K G R C T J R
J F E G K Z E Z U I B Z E T K W R
D X J X E M L Q X O J C K S Z E G
Z P W U Q G K Z J N R Y E Q X S K

Can you find these words?

HYDRAULIC JACK
EXHAUST PIPE
EXTENSION
METAL FATIGUE
CHAFE MARKS
NEOPRENE
MOTOR MOUNTS
VIBRATION
LINKAGE

ACROSS/DOWN

REMOVE ENGINE

ANSWER KEY

```
N . . . . . . . . . . . . . . . .
E X H A U S T P I P E . . . . . .
O . . Y . . M O T O R M O U N T S
P . . . D . E X T E N S I O N . .
R . . . . R T . . . . . . . . . .
E . . . C H A F E M A R K S . . .
N . . . . . L U . . . . . . . . .
E . . . . . F . L V . . . . . . .
. . . . . . A . L I N K A G E S .
. . . . . . T . . B C . . . . . .
. . . . . . I . . R . J . . . . .
. . . . . . G . . A . . A . . . .
. . . . . . U . . T . . . C . . .
. . . . . . E . . I . . . . K . .
. . . . . . . . . O . . . . . . .
. . . . . . . . . N . . . . . . .
```

ENGINE AND MOUNTS I

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1				2						XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	3								XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	4									XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

1. signs that heat or wearing away have removed the finish
3. rods that can transfer movement from one unit to another
4. an added part

DOWN:

2. the pipe that joins the exhaust manifold to the muffler (2 words)

ENGINE AND MOUNTS I

ANSWER KEY

ACROSS:		DOWN:	
1.	CHAFEMARKS	2.	EXHAUSTPIPE
3.	LINKAGES		
4.	EXTENSION		
5.	FUELPUMP		

```
  C H A F E M A R K S
          X
          H
  L I N K A G E S
          U
E X T E N S I O N
          T
          P
          I
          P
          E
```

AM-39-19

ENGINE AND MOUNTS II

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1											XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	2	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	3													XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	4								XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

1. parts that hold the motor in place (2 words)
3. a device for lifting that works by liquid under pressure (2 words)
4. a plastic that is like rubber

DOWN:

1. the breaking down of metal due to strong motion, twisting, or bending (2 words)
2. moving back and forth

ENGINES AND MOUNTS II

ANSWER KEY

ACROSS:		DOWN:	
1.	MOTORMOUNTS	1.	METALFATIGUE
3.	HYDRAULICJACK	2.	VIBRATION
4.	NEOPRENE		

```
        M O T O R M O U N T S
        E
        T     V
H Y D R A U L I C J A C K
        L     B
        F     R
        A     A
        T     T
        I     I
        G     O
        U     N E O P R E N E
        E
```

LEARNING WORDS USED IN CLEANING ENGINES

INTRODUCTION

Whenever an engine is removed from a vehicle for an overhaul or other corrective service, it is desirable to clean the engine with a steam cleaner or some other pressurized cleaner designed for this purpose. A clean engine placed upon a work bench or attached to an engine stand assures the mechanic of a clean work area which prevents time-consuming clean-up during servicing. A clean engine and work area also reduce the possibility of contaminating replacement parts with dirt and grit which could cause premature failure of an otherwise good overhaul job. In this unit you will learn the technical vocabulary related to cleaning engines.

PERFORMANCE OBJECTIVES

You will match 11 words used in cleaning engines with their definitions. Your teacher will provide a list of words and definitions. You should match at least 9 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER **only** the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER **all** rows of words, definitions, and pictures except **one**. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

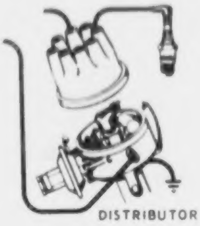
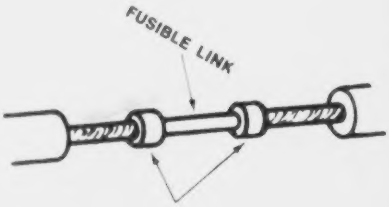
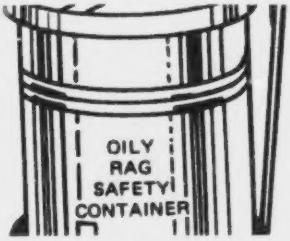
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

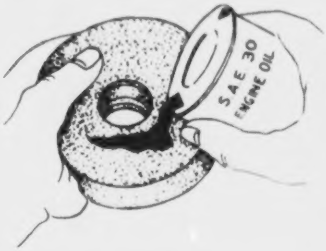
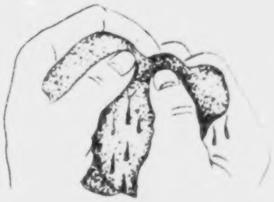
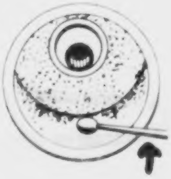
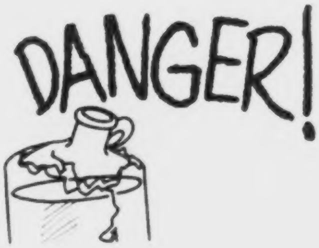
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

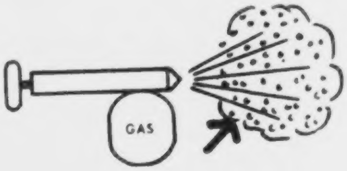
CLEANING ENGINES

caustic (caust ic)	a fluid that will burn your eyes and skin	
distributor (dis trib u tor)	a device that makes or breaks the ignition primary circuit and directs the high voltage to the spark plugs	 DISTRIBUTOR
fusible links (fus i ble links)	a fuse wire used to protect the main wiring from shorts or grounds	 FUSIBLE LINK
lacquer (lac quer)	body paint that dries fast	
low flash point (low flash point)	begins to burn at a low temperature	 OILY RAG SAFETY CONTAINER

CLEANING ENGINES

lubricant (lu bri cant)	something (like oil and grease) used between two moving parts to decrease friction	
saturated (sat u rat ed)	soaked with liquid	
steam cleaner (steam clean er)	a machine used to clean large parts by using steam and detergent	
swab (swab)	cotton or cloth on the end of a small stick	
toxic (tox ic)	poisonous	

CLEANING ENGINES

vapor (vap or)	the gas form of a liquid or solid (like steam)	

CLEANING ENGINES

L O W F L A S H P O I N T R P J A

T T O X I C P B N U P I N D I D P

S A T U R A T E D S W A B Z B E U

T K I P X S H Q A B N Y T W Y B H

A Y E O E N U R Y Z G M M P D X G

T Q A S S E A C P L W Y S G L R E

E Y G A F P K X F F B A A J Y B H

I S L D I E K S S D T X G I S G M

N K H G G Q B N I N P L O O G F L

Q J F U S I B L E L I N K S G T I

L U B R I C A N T R R X W A J M G

S T E A M C L E A N E R X N D F Y

R X C S Z A M Y V X D L S F T K X

E H H B F Y L F L A C Q U E R N R

N Q N E F R Z U B V A P O R V E D

Q Z B N T X Z Y N A D N B S M Z L

X F K T V G D I S T R I B U T O R

C O M J G Y N I J Y C A U S T I C

Can you find these words?

LOW FLASH POINT
DISTRIBUTOR
LUBRICANT
VAPOR
STEAM CLEANER
LACQUER
TOXIC
SWAB
FUSIBLE LINKS
SATURATED
CAUSTIC

ACROSS

CLEANING ENGINES

ANSWER KEY

```
L O W F L A S H P O I N T . . . .
. T O X I C . . . . . . . . . . .
S A T U R A T E D S W A B . . . .
. . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . .
. . F U S I B L E L I N K S . . .
L U B R I C A N T . . . . . . . .
S T E A M C L E A N E R . . . . .
. . . . . . . . . . . . . . . . .
. . . . . . . . L A C Q U E R . .
. . . . . . . . . V A P O R . . .
. . . . . . . . . . . . . . . . .
. . . . . . D I S T R I B U T O R
. . . . . . . . . . C A U S T I C
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CLEANING ENGINES

W R K S O W N L R K A L Y X U V N W F B L
F H U K G E H M V K W U B V Y Y M Q O Z D
S H A W F P P R T A K B C T W B S F K A I
Q H W A T G L U O T Z R K E P D J W G E U
T V R S B A S D X H Y I U U Z F H U G Q E
C T T J D Q W N I F N C F C G Y K C Q U R
L D L S T E A M C L E A N E R J R S K M A
D I S T R I B U T O R N X G A U I R F E Z
L U M J G J B B L W C T B D M N P Z M V C
L K H S K M O I D F U S I B L E L I N K S
U A R M K H Y D I L I S E N A I W O D C A
I Y O Y R P L V L A C Q U E R O F J U U T
W E B G R P C A U S T I C B L Z K B Q N U
D N T L T Y L P M H M H Z F J S B P T C R
U J K G R A Z O E P A L W W D R F Z K B A
U Y R Y K R P R U O O X Y A R Q T A D S T
Z Z Y P V Q T E Q I E N O X Z U T A O T E
P T V F Q S T S C N H L Z H Q D B M Z R D
M O D F C V T D B T E V C F P E V A Z B V

Can you find these words?

LOW FLASH POINT
DISTRIBUTOR
LUBRICANT
VAPOR
STEAM CLEANER
LACQUER
TOXIC
SWAB
FUSIBLE LINKS
SATURATED
CAUSTIC

ACROSS/DOWN

CLEANING ENGINES

ANSWER KEY

```
. . . . . . . . . . . L . . . . . . . . .
. . . . . . . . . . . U . . . . . . . . .
. . . . . . . . T . . B . . . . . . . . .
. . . . . . . . O . . R . . . . . . . . .
. . . . . . S . X . . I . . . . . . . . .
. . . . . . W . I . . C . . . . . . . . .
. . . S T E A M C L E A N E R . . . . . .
D I S T R I B U T O R N . . . . . . . . .
. . . . . . . . . W . T . . . . . . . . .
. . . . . . . . . F U S I B L E L I N K S
. . . . . . . . . L . . . . . . . . . . A
. . . . . . . V L A C Q U E R . . . . . T
. . . . . . C A U S T I C . . . . . . . U
. . . . . . . P . H . . . . . . . . . . R
. . . . . . . O . P . . . . . . . . . . A
. . . . . . . R . O . . . . . . . . . . T
. . . . . . . . . I . . . . . . . . . . E
. . . . . . . . . N . . . . . . . . . . D
. . . . . . . . . T . . . . . . . . . . .
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CLEANING ENGINES

E O F U S I B L E L I N K S A U D T G
D N V C T C P T K G E V W R D Z D V Q
D K Q R E J K B J C S P O F V C Q M Z
C C H Y A L Q A N Y A L V H W A I X T
W C I X M N S N Y V D U Q P F C P N R
H W D I C G X G T A L X S R J C A O V
D L J Y L Y V X P X P V R T R C T S R
W A K R E O I T R H I J C E I U F M P
C Z T L A D W T S A E P U R B C Z U R
O Z V I N U G F S S B Q B I D D U O A
F C D J E V Z K L W C U R Z G V M U K
K L A I R E B Q K A L T I W N D O E I
R N Y A A Z Z F L B S V O H T R T M W
Q F Q I J F J V Z I G H H X A E G F V
S A T U R A T E D N D X P B I I J D R
O U K L Y D J F I R Q W S O H C B W Z
C V N Z D A L R W U P G A W I U Y C W
V O E B A L P F W F J D O J V N Z M H
R Y Z H U N P R D V H M M Z I F T L Z

Can you find these words?

LOW FLASH POINT
DISTRIBUTOR
LUBRICANT
VAPOR
STEAM CLEANER
LACQUER
TOXIC
SWAB
FUSIBLE LINKS
SATURATED
CAUSTIC

ACROSS/DOWN/DIAGONAL

CLEANING ENGINES

ANSWER KEY

```
. . F U S I B L E L I N K S . . . . .
. . . . T . . . . . . . . . . . . . .
. . . . E . . . . C . . . . V . . . .
. . . . A . . . . . A . . . . A . . T
. . . . M . . . . . . U . . . . P N R
. . . . C . . . . . . . S . . . A O .
. . . . L . . . . . . . . T R C T . R
. . . . E O . . . . . . . E I U . . .
. . . . A . W . . . . . U R B C . . .
. . . . N . . F . S . Q B I . . . . .
. . . . E . . . L W C U R . . . . . .
. . . . R . . . . A L T . . . . . . .
. . . . . . . . L B S . O . . . . . .
. . . . . . . . . I . H . X . . . . .
S A T U R A T E D . . . P . I . . . .
. . . . . . . . . . . . . O . C . . .
. . . . . . . . . . . . . . I . . . .
. . . . . . . . . . . . . . . N . . .
. . . . . . . . . . . . . . . . T . .
```

CLEANING ENGINES I

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1									XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	3	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	4												XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	5	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	6									XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

1. soaked with liquid
4. a machine used to clean large parts by using steam and soap (2 words)
6. something (like oil & grease) used between two moving parts

DOWN:

3. device that makes or breaks ignition circuit & directs high voltage to the spark plugs
5. a fluid that will burn your eyes and skin

CLEANING ENGINES I

ANSWER KEY

ACROSS:		DOWN:	
1.	SATURATED	3.	DISTRIBUTOR
4.	STEAMCLEANER	5.	CAUSTIC
6.	LUBRICANT		

```
          S A T U R A T E D
        D
        I
        S T E A M C L E A N E R
  C     T
  A     R
L U B R I C A N T
  S     B
  T     U
  I     T
  C     O
        R
```

CLEANING ENGINES II

XX XX	XX XX	XX XX	1	XX XX	XX XX	2	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	3							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	4	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	5	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	6													XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

3. body paint that dries fast
6. begins to burn at a low temperature (3 words)

DOWN:

1. the gas form of a liquid or solid (like steam)
2. a fuse wire used to protect the main wiring harness from shorts & grounds (2 words)
4. a small cloth on the end of a stick
5. poisonous

CLEANING ENGINES II

ANSWER KEY

ACROSS:		DOWN:	
3.	LACQUER	1.	VAPOR
6.	LOWFLASHPOINT	2.	FUSIBLELINKS
		4.	SWAB
		5.	TOXIC

```
  V     F
L A C Q U E R
  P     S
  O     I
  R     B   S             T
        L O W F L A S H P O I N T
        E   A             X
        L   B             I
        I                 C
        N
        K
        S
```

LEARNING WORDS USED IN DISASSEMBLING ENGINES

INTRODUCTION

Although many automotive repair shops do not make a practice of completely overhauling engines today, the mechanic must still know how to disassemble an engine and how to replace component parts even though he may not have to perform a complete engine overhaul. In small rural communities, the mechanic will be required to perform complete engine overhaul service since there are no large volume jobbers in the area. In this unit you will learn the technical vocabulary related to disassembling engines.

PERFORMANCE OBJECTIVES

You will match 26 words used in disassembling engines with their definitions. Your teacher will provide a list of words and definitions. You should match at least 20 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.

2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

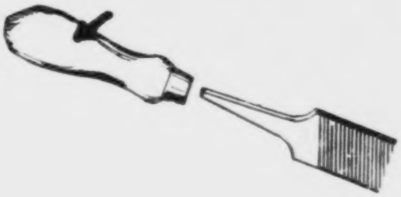
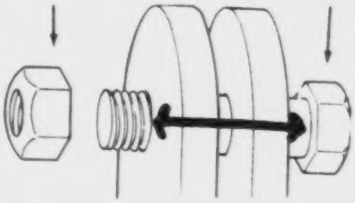
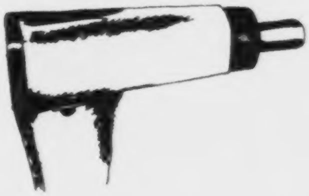
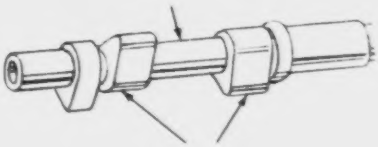
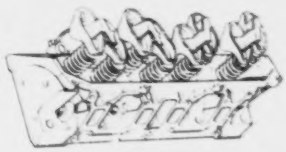
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

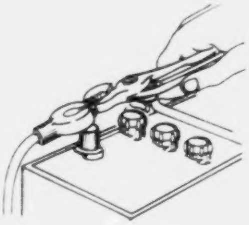
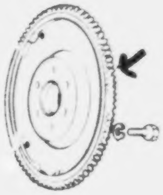
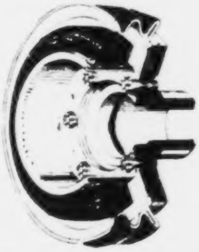
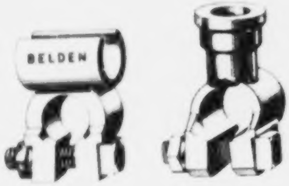
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

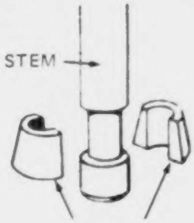
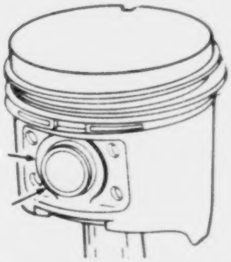
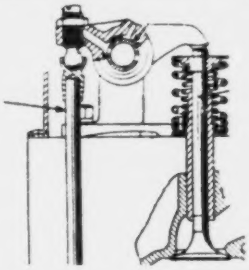
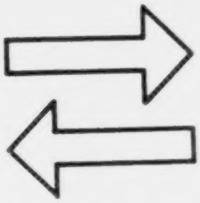
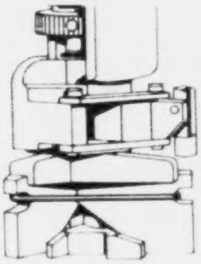
DISASSEMBLING ENGINE

accessory (ac ces sor y)	something added to a device that makes it more usable	
alignment (a lign ment)	the state of being in a true line	
air impact wrench (air im pact wrench)	a tool that works by air pressure to run nuts and bolts on and off	
camshaft (cam shaft)	a shaft with lobes used to open the valves	
cylinder heads (cyl in der heads)	the part used to cover the tops of cylinders and forms the combustion chamber	

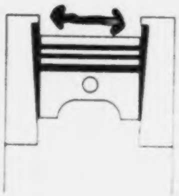
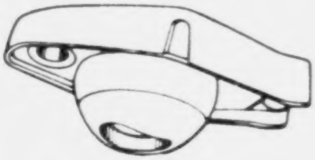
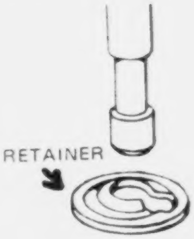
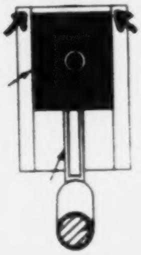
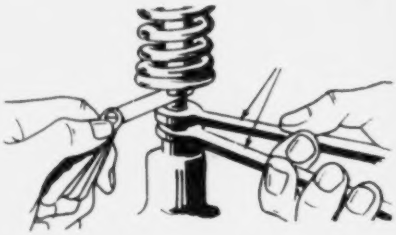
DISASSEMBLING ENGINE

disassemble (dis as sem ble)	to take apart	
flywheel (fly wheel)	rotating metal wheel attached to the crankshaft that aids in smoothing out power surges	
harmonic (har mon ic) balancer (bal an cer)	a device that is used to dampen twisting motion from power strokes of an engine	
horizontal (hor i zont al)	straight line running left to right	
interchanged (in ter changed)	one thing taking the place of another thing	

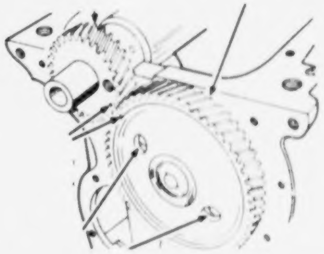
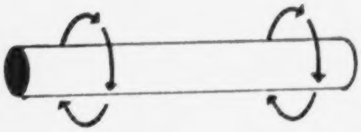
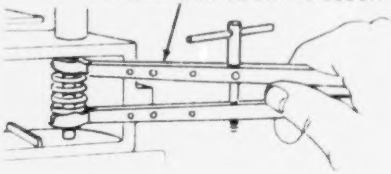
DISASSEMBLING ENGINES

keepers (keep ers)	a device used to keep valve springs in place	
pistons (pis tons)	round castings attached to connecting rods that slide up and down in the cylinders	
push rods (push rods)	rods that join the valve lifter to the rocker arm	
reverse (re verse)	in the opposite direction	
ridge reamer (ridge ream er)	a tool used to remove the ring ridge formed by wear at the top of the cylinder	

DISASSEMBLING ENGINE

ring ridge (ring ridge)	formed at the top of a cylinder as it is worn away	
rocker arm (rock er arm)	part used to change upward motion of push rods into an opening motion of valve stem	
spring retainers (spring re tain ers)	devices for holding springs in place	
TDC (TDC)	Top Dead Center upper limit of piston travel	
adjustable tappets (tap pets)	screws used to change the clearance between valve stem and lifter or rocker arm	

DISASSEMBLING ENGINES

timing gears (tim ing gears)	the gears attached to the camshaft and the crankshaft to drive the camshaft	
torque (torque)	turning or twisting force	
valve spring (valve spring) compressor (com pres sor)	a device that is used to remove valve-springs	
vertical (vert i cal)	up and down	

DISASSEMBLING ENGINE

C D O S A T I E N V A M S O E E W U G R D

A C C E S S O R Y P U S H R O D S J S W D

S P R I N G R E T A I N E R S C H D U H C

C A M S H A F T K E E P E R S O X E S W L

T I M I N G G E A R T D C D P I B B S Y V

V Q J Y N E O C J H O R I Z O N T A L V F

Q K G F L Y W H E E L L G M F K O V R J B

G A N C F G V E R T I C A L E B W A F F V

S E A I R I M P A C T W R E N C H Z V L F

P I S T O N S W D E L B Q P W S R M J O I

W C E I L I V F O L W A W N X H P P M V D

L L P A L J A O A V Q R Y B F L E A U K O

H Y K Y T L Q Q B R O C K E R A R M H B R

R I D G E R E A M E R I N G R I D G E O Y

D I S A S S E M B L E R E V E R S E N G C

P Z S E P O V X C Y L I N D E R H E A D S

O T O R Q U E H D A L I G N M E N T D Y L

I C I S G E N D I S K X Y H T A P P E T S

L G N L I N T E R C H A N G E D T I J U O

Can you find these words?

CYLINDER HEADS
DISASSEMBLE
ROCKER ARM
ACCESSORY
FLYWHEEL
REVERSE
TORQUE
TDC

SPRING RETAINERS
INTERCHANGED
TIMING GEAR
RING RIDGE
VERTICAL
CAMSHAFT
PISTONS
DISK

AIR IMPACT WRENCH
RIDGE REAMER
HORIZONTAL
ALIGNMENT
PUSH RODS
TAPPETS
KEEPERS

ACROSS

DISASSEMBLING ENGINE

ANSWER KEY

```
. . . . . . . . . . . . . . . . . . . . .
A C C E S S O R Y P U S H R O D S . . . .
S P R I N G R E T A I N E R S . . . . . .
C A M S H A F T K E E P E R S . . . . . .
T I M I N G G E A R T D C . . . . . . . .
. . . . . . . . . H O R I Z O N T A L . .
. . . F L Y W H E E L . . . . . . . . . .
. . . . . . V E R T I C A L . . . . . . .
. . A I R I M P A C T W R E N C H . . . .
P I S T O N S . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . R O C K E R A R M . . .
R I D G E R E A M E R I N G R I D G E . .
D I S A S S E M B L E R E V E R S E . . .
. . . . . . . . C Y L I N D E R H E A D S
. T O R Q U E . . A L I G N M E N T . . .
. . . . . . . D I S K . . . T A P P E T S
. . . . I N T E R C H A N G E D . . . . .
```

DISASSEMBLING ENGINE

```
I N T E R C H A N G E D G Y G W N V F T N
J F D N Z U D I S C C A M S H A F T F F H
R O C K E R A R M R Y X K X V I E P S K R
I N G E E E P I V R L G F K P R R F M T R
N F F T G M U M E I I H V N J V M K K O A
G V G K A T S P R I N G R E T A I N E R S
R G W P W C H A T I D H O R I Z O N T A L
I U X H H X R C I R E D O W O W M T I P C
D B Z S L O O T C Q R I D G E R E A M E R
G X X H W J D W A E H S I H O X P P I S Y
E V D I D P S R L Q E A F B X B O P N E L
G V P J B S K E W Z A S T O R Q U E G T Y
A L I G N M E N T T D S E Q V E S T G J P
I S S P W H E C O I S E R E V E R S E R L
M L T C U M P H U S J M U M Q L Y F A E D
W I O W Y B E V V P N B A Y G N C S R C C
F N N Q C K R Y S I F L Y W H E E L R G B
K J S H L G S A V I D E K R B V T R H R Q
M Q A C C E S S O R Y U V V D O V S J Z R
```

Can you find these words?

CYLINDER HEADS
DISASSEMBLE
ROCKER ARM
ACCESSORY
FLYWHEEL
REVERSE
TORQUE
TDC

SPRING RETAINERS
INTERCHANGED
TIMING GEAR
RING RIDGE
VERTICAL
CAMSHAFT
PISTONS
DISK

AIR IMPACT WRENCH
RIDGE REAMER
HORIZONTAL
ALIGNMENT
PUSH RODS
TAPPETS
KEEPERS

ACROSS/DOWN

DISASSEMBLING ENGINE

ANSWER KEY

```
I N T E R C H A N G E D . . . . . . . . .
. . D . . . D I S C C A M S H A F T . . .
R O C K E R A R M . Y . . . . . . . . . .
I . . . . . P I V . L . . . . . . . . . .
N . . . . . U M E . I . . . . . . . . . .
G . . . . . S P R I N G R E T A I N E R S
R . . . . . H A T . D H O R I Z O N T A L
I . . . . . R C I . E D . . . . . T I . .
D . . . . . O T C . R I D G E R E A M E R
G . . . . . D W A . H S . . . . . P I . .
E . . . . . S R L . E A . . . . . P N . .
. . P . . . K E . . A S T O R Q U E G . .
A L I G N M E N T . D S . . . . . T G . .
. . S . . . E C . . S E R E V E R S E . .
. . T . . . P H . . . M . . . . . . A . .
. . O . . . E . . . . B . . . . . . R . .
. . N . . . R . . . F L Y W H E E L . . .
. . S . . . S . . . . E . . . . . . . . .
. . A C C E S S O R Y . . . . . . . . . .
```

AM-41-19

DISASSEMBLING ENGINE

X I I S O Y J C C M Z X Z M M E G Y C X X

C R R N M I I C L Q L C N G V B M D C F E

A B P I T L F L Y W H E E L Q F T R Z V P

M H A I N E U I W L V R L V J F A K Q A U

S P R I N G R E T A I N E R S B P T U C S

H N X I R V R C W K T N U V C S P R Y C H

A S P I F I A I H R R I D G E R E A M E R

F Y C A D Q M W D A O F D E L R T Q E S O

T P D T L W G P P G N C R M R R S H A S D

P K H I I I I S A I E G K T H H U E S O S

L V G I S M G H T C P C E E O W E K B R W

V V Q I Z A I N V K T I C D R R K A H Y A

X A K D U A S N M E T W S Z I A Q E D C C

D P S I I R I S G E R R R T Z C R U T S A

Y Y K W E S G E E G N T K E O O S M E F R

F W D P I U K H J M E T I Y N N V V I K A

F N E O M Z S R R E B A A C T C S Q P Z D

P E O I E E G X B G F L R I A N H R B Y A

K L G O I S D H O U C N E E L L M Z Y E A

Can you find these words?

CYLINDER HEADS
DISASSEMBLE
ROCKER ARM
ACCESSORY
FLYWHEEL
REVERSE
TORQUE
TDC

SPRING RETAINERS
INTERCHANGED
TIMING GEAR
RING RIDGE
VERTICAL
CAMSHAFT
PISTONS
DISK

AIR IMPACT WRENCH
RIDGE REAMER
HORIZONTAL
ALIGNMENT
PUSH RODS
TAPPETS
KEEPERS

ACROSS/DOWN/DIAGONAL

DISASSEMBLING ENGINE

ANSWER KEY

```
. . I . . . . . . . . . . . . . . . C . .
C . R N . . . C . . . . . . . . . D . . .
A . . I T . F L Y W H E E L . . T . . . P
M . A . N E . . . L . R . . . . A . . A U
S P R I N G R E T A I N E R S . P . . C S
H . . . R . R C . . . N . V . . P . . C H
A . . . . I . I H R R I D G E R E A M E R
F . . A . . M . D A O . . E . R T . . S O
T . D T L . . P . G N C . . R . S . . S D
. . . I I I . . A . E G K T H H . E . O S
. . . . S M G . . C P . E E O . E . . R .
. . . . . A I N V . T I . D R R . A . Y .
. . . D . . S N M E . W S . I A Q . D . .
. . . . I R . S G E R . R T Z . R U . S .
. . . . E S . . E G N T . E O . . M E . .
. . . P . . K . . M E T I . N N . . . . .
. . E . . . . . . . B A . C T C S . . . .
. E . . . . . . . . . L R . A . H . . . .
K . . . . . . . . . . . E . L L . . . . .
```

DISASSEMBLING ENGINE I

XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	2								XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	3											XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	5	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	6									XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. a shaft with lobes used to open the valves
3. to take apart
6. something added on to a device to make it more useable

DOWN:

1. the state of being in a true line
2. the part used to cover the tops of cylinders (2 words)
5. a wheel attached to the crankshaft that rotates and is used to reduce speed variaton

DISASSEMBLING ENGINE I

ANSWER KEY

ACROSS:

2. CAMSHAFT
3. DISASSEMBLE
6. ACCESSORY

DOWN:

1. ALIGNMENT
2. CYLINDERHEADS
5. FLYWHEEL

```
      A             C A M S H A F T
      L             Y
    D I S A S S E M B L E
      G             I
      N         F   N
      M         L   D
A C C E S S O R Y   E
      N         W   R
      T         H   H
                E   E
                E   A
                L   D
                    S
```

DISASSEMBLING ENGINE II

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1			2							XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	3								XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	4							XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

1. from left to right
3. rods that join the valve lifter to the rocker arm (2 words)
4. a device used to keep valve springs in place

DOWN:

2. one thing taking the place of another thing
3. round plugs, open at one end, that slide up and down cylinders

DISASSEMBLING ENGINE II

ANSWER KEY

ACROSS:

1. HORIZONTAL
3. PUSHRODS
4. KEEPERS

DOWN:

2. INTERCHANGED
3. PISTONS

```
  H O R I Z O N T A L
        N
        T
        E
P U S H R O D S
I       C
S       H
T       A
O       N
N       G
S     K E E P E R S
        D
```

DISASSEMBLING ENGINE III

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	2	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	3											XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

3. a tool used to remove cylinder ring ridge (2 words)

DOWN:

1. Top Dead Center
2. in opposite direction
3. build-up formed at top of cylinder as it is worn away by piston ring (2 words)

DISASSEMBLING ENGINE III

ANSWER KEY

ACROSS:	DOWN:
3. RIDGEREAMER	1. TDC
	2. REVERSE
	3. RINGRIDGE

```
    T   R

R I D G E R E A M E R

I   C   V

N       E

G       R

R       S

I       E

D

G

E
```

DISASSEMBLING ENGINE IV

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	2	XX XX	XX XX	XX XX	XX XX	XX XX	3	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	5								XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

5. up and down

DOWN:

1. screws used to change the distance between valve stem and lifter or rocker arm
2. the gear joined to camshaft and the crankshaft to drive the camshaft (2 words)
3. turning or twisting

DISASSEMBLING ENGINE IV

ANSWER KEY

ACROSS:

5. VERTICAL

DOWN:

1. TAPPETS
2. TIMINGGEAR
3. TORQUE

	T									
	A			T						T
	P			I						O
	P			M						R
V	E	R	T	I	C	A	L			Q
	T			N						U
	S			G						E
				G						
				E						
				A						
				R						

LEARNING WORDS USED IN TESTING AND ADJUSTING MANUAL TRANSMISSIONS

INTRODUCTION

There are many different manual transmissions and shifting mechanisms. Each make and model vehicle may have different shifting mechanisms and transmissions of 3, 4, and 5 speed design. Often the same make and model vehicle will have more than one transmission option available. The experienced mechanic must be able to identify and locate proper service specifications and test and adjust each type of design. In this unit you will learn the technical vocabulary related to testing and adjusting manual transmissions.

PERFORMANCE OBJECTIVES

You will match 8 words used in testing and adjusting manual transmissions with their definitions. Your teacher will provide a list of words and definitions. You should match at least 6 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.

2. COVER **only** the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER **all** rows of words, definitions, and pictures except **one**. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

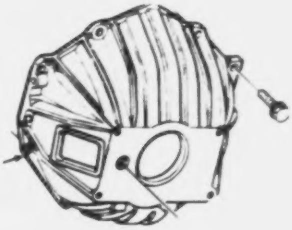
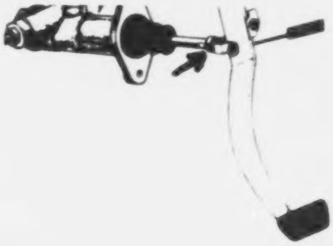
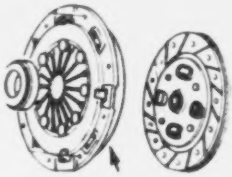
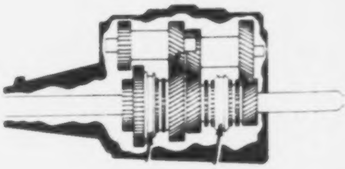
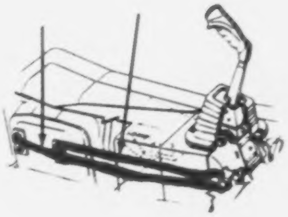
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

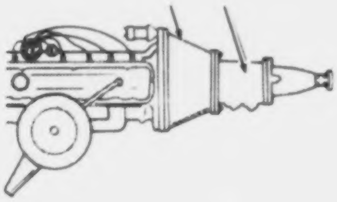
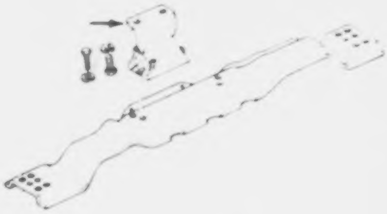
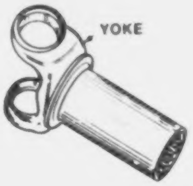
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

TESTING AND ADJUSTING MANUAL TRANSMISSIONS

bell housing (bell hous ing)	a connection from transmission to engine that covers the clutch	
clevis (clev is)	a U-shaped metal fastener with holes in each end	
clutch (clutch)	a device used to connect or disconnect the flow of power from the engine to the transmission	
manual (man u al) transmission (trans mis sion)	requires changing gears by hand	
shift rods (shift rods)	links between gear shift lever and transmission	

TESTING AND ADJUSTING MANUAL TRANSMISSIONS

transmission (trans mis sion)	a device that provides different gear ratios between the engine and the driving wheels	
transmission (trans mis sion) mounts (mounts)	rubber cushioned metal plates that hold the transmission in place	
yoke (yoke)	the parts that allow you to attach the drive shaft to the transmission and differential	

MANUAL TRANSMISSIONS

T R A N S M I S S I O N O N T R I A H P

E B R X Q I I U I S W S H I F T R O D S

G F R W J E Z Y O K E U E P T N A X F L

O C B Q Y W O V R H F U I E Q A E V C I

Q N E B D A I L V O O S Y P R N H W N K

Z H K S U Y N J F W M K S B S O T X Q Y

C L U T C H L D F C G X U A F D Y T C G

C B E L L H O U S I N G I I R E X S P V

E K B V P V Q N E T D T D B K M R Q A W

O T X N G W S I M Q B V B Y X U U J O L

E I R F D C J W O Q B K H K O R O N Q X

H W T T S T Y I N A V W X X R O M E H E

K Y F P V C O D W M R P W I A F N Y S T

P K K X G H E M K A P D F O H M S H Y Z

U P X R F Y Z N P L E U R A I H X X F H

P L C L E V I S Q R K H J T C V M E F Y

Can you find these words?

TRANSMISSION
CLUTCH
BELL HOUSING
CLEVIS
SHIFT RODS
YOKE

ACROSS

MANUAL TRANSMISSIONS

ANSWER KEY

```
T R A N S M I S S I O N . . . . . . . .
. . . . . . . . . . . S H I F T R O D S
. . . . . . . Y O K E . . . . . . . . .
. . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . .
C L U T C H . . . . . . . . . . . . . .
. B E L L H O U S I N G . . . . . . . .
. . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . .
. . C L E V I S . . . . . . . . . . . .
```

MANUAL TRANSMISSIONS

P	S	N	B	P	S	H	I	F	T	R	O	D	S
K	C	V	V	J	B	R	B	T	R	U	T	R	S
J	L	C	L	K	V	W	P	V	A	B	T	P	R
B	E	L	L	H	O	U	S	I	N	G	G	K	L
T	V	U	T	S	I	Y	Z	P	S	T	O	N	Z
Z	I	T	C	Z	Q	O	R	L	M	E	O	J	C
X	S	C	D	H	N	S	K	X	I	Y	T	A	S
B	E	H	T	X	P	I	T	C	S	W	I	L	Z
B	F	F	P	T	A	F	I	Q	S	G	N	Q	B
O	Q	H	B	N	J	V	H	J	I	G	F	V	X
Q	S	H	M	L	M	Z	O	Y	O	K	E	U	Y
U	O	E	H	T	Z	A	T	Q	N	V	I	Y	Q

Can you find these words?

TRANSMISSION
CLUTCH
BELL HOUSING
CLEVIS
SHIFT RODS
YOKE

ACROSS/DOWN

MANUAL TRANSMISSIONS

ANSWER KEY

```
. . . . . S H I F T R O D S
. C . . . . . . . R . . . .
. L C . . . . . . A . . . .
B E L L H O U S I N G . . .
. V U . . . . . . S . . . .
. I T . . . . . . M . . . .
. S C . . . . . . I . . . .
. . H . . . . . . S . . . .
. . . . . . . . . S . . . .
. . . . . . . . . I . . . .
. . . . . . . . Y O K E . .
. . . . . . . . . N . . . .
```

MANUAL TRANSMISSIONS

T H D H D W T V T I A P L D W Q Y N
E D R U Y Y T S S R U R J A N R O O
L A N I M Z K F W O C Z Z V L I K P
B L F O T I K D D J L O F M S S E F
V A Y E E B L H Y W E M R S K W A J
X S X S I K E N Q U V G I P J I E B
W P T C P L A F Q H I M V C Z Q Z T
Q C C S H F V K N R S Y V I V W V H
B E L L H O U S I N G X H G J C E N
E X P U N I R A A T C E O Z L A P K
E U A P T X F R V D G G D I W P T V
H E S K A C T T R N D D C P Z J P F
B F N U I O H M R N B Q X X R A T T
H V O B H S V J N O F Q S T E E C H
K C U U P V X G W Q D C P R V F B F
W H U N C J Z N S R S S W Q O Q D U

Can you find these words?

TRANSMISSION
CLUTCH
BELL HOUSING
CLEVIS
SHIFT RODS
YOKE

ACROSS/DOWN/DIAGONAL

MANUAL TRANSMISSIONS

ANSWER KEY

```
. . . . . . . . . . . . . . . . Y N
. . . . . . . . . . . . . . . . O .
. . . . . . . . . . C . . . . I K .
. . . . . . . . . . L . . . S . E .
. . . . . . . . . . E . . S . . . .
. . . . . . . . . . V . I . . . . .
. . . . . . . . . . I M . . . . . .
. C . S . . . . . . S . . . . . . .
B E L L H O U S I N G . . . . . . .
. . . U . I . . A . . . . . . . . .
. . . . T . F R . . . . . . . . . .
. . . . . C T T . . . . . . . . . .
. . . . . . H . R . . . . . . . . .
. . . . . . . . . O . . . . . . . .
. . . . . . . . . . D . . . . . . .
. . . . . . . . . . . S . . . . . .
```

MANUAL TRANSMISSIONS

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	2						XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	3	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	4						XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	5												XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. device used to connect or disconnect flow of power from engine to transmission
4. a U-shaped metal piece with holes in each end
5. device that provides different gear ratios between engine and driving wheel

DOWN:

1. a connection from transmission to engine (2 words)
3. the parts that allow you to attach the drive train together

MANUAL TRANSMISSIONS

ANSWER KEY

ACROSS:		DOWN:	
2.	CLUTCH	1.	BELLHOUSING
4.	CLEVIS	3.	YOKE
5.	TRANSMISSION		

					B								
					E								
				C	L	U	T	C	H				
					L								
		Y			H								
		O			O								
		K			U								
C	L	E	V	I	S								
					I								
		T	R	A	N	S	M	I	S	S	I	O	N
					G								

LEARNING WORDS USED IN REPLACING MANUAL TRANSMISSIONS

INTRODUCTION

With the advent of government regulations that specify a minimum number of miles per gallon, automobile manufacturers, in an effort to meet the miles per gallon requirement, are installing more manual transmissions in late model automobiles. A mechanic must be able to service these transmissions. In this unit you will learn the technical vocabulary related to replacing manual transmissions.

PERFORMANCE OBJECTIVES

You will match 7 words used in replacing manual transmissions with their definitions. Your teacher will provide a list of words and definitions. You should match at least 6 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.

2. COVER **only** the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER **all** rows of words, definitions, and pictures except **one**. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

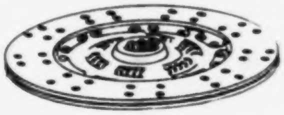
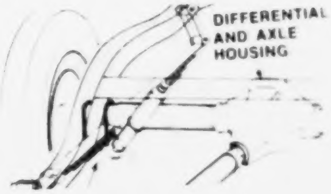
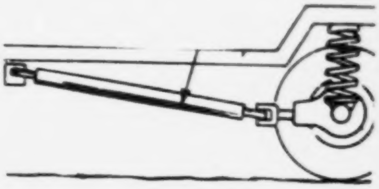
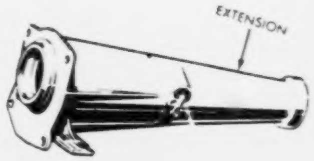
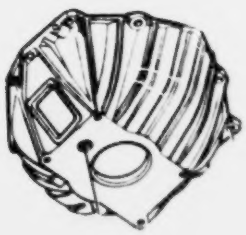
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

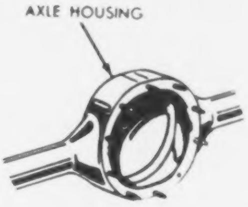
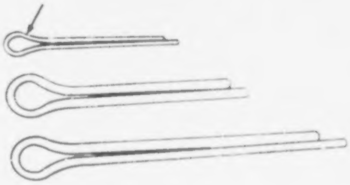
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

REPLACING MANUAL TRANSMISSIONS

clutch disc (clutch disc)	the friction disc part of a clutch assembly that is squeezed between the flywheel and the clutch pressure plate	
differential (dif fer en tial)	a unit that will drive both rear axles at the same time but at different speeds	
drive shaft (drive shaft)	a shaft that joins transmission output shaft to differential pinion shaft	
extension (ex ten sion)	an addition added to something to increase its length	
flywheel housing (fly wheel hous ing)	the covering for the flywheel	

REPLACING MANUAL TRANSMISSIONS

housing (hous ing)	cover for mechanical parts	 AXLE HOUSING
minimum (min i mum)	the least	

REPLACE TRANSMISSIONS

F L Y W H E E L H O U S I N G U L J E N L

N Y X B U V M Z L H Y M J Z P V Z B N K J

V I Z P C V Y Y U G I D O D Q Z Z A F A Q

Y E C L U T C H D I S C C A U T B M S R E

I S I E M W I O P G J A P Z A K Z X O U Y

Y X X B S Y T B D U N N F S D N T Q A Q V

V Y A T Z U F H V B A D N O I R H S F N Z

P T M X N Z J L R C R C N V C W J J L W B

T B B I H K X I W A B S E B W Q B X I J W

U H X W K I E D R I V E S H A F T G B R F

D I F F E R E N T I A L A J W X P B T D J

A R B X M Z V O K X Z Z B S A X P K Z Y A

V I Q B Y H J I E O F I S E D I S I P W O

P H E G N Y M V B F T M I N I M U M U E X

M A A H O U S I N G O H Q Q U F Q M A L E

W E U X D H N U V R F N J Q T Y M J O S V

S P T A R U C M A S W W O O J W X U M X P

Z O F E X T E N S I O N K K X F S B N M W

Can you find these?

FLYWHEEL HOUSING
DRIVE SHAFT
EXTENSION

CLUTCH DISC
MINIMUM

DIFFERENTIAL
HOUSING

ACROSS

REPLACE TRANSMISSIONS

ANSWER KEY

```
F L Y W H E E L H O U S I N G . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . C L U T C H D I S C . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . D R I V E S H A F T . . . .
D I F F E R E N T I A L . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . M I N I M U M . . .
. . . H O U S I N G . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . E X T E N S I O N . . . . . . . . .
```

REPLACE TRANSMISSIONS

E	U	U	H	L	N	L	N	C	W	O	O	I	S	T	Y	O	N	U	V
X	G	I	B	P	W	V	L	W	T	V	B	Y	D	N	L	Z	J	T	K
T	E	I	D	O	S	E	L	W	I	D	I	W	F	I	Q	W	Y	E	V
E	J	D	I	F	F	E	R	E	N	T	I	A	L	V	Z	V	D	I	Y
N	G	R	B	M	S	E	I	Q	S	J	E	E	Y	J	B	Z	Y	S	F
S	I	I	E	N	W	O	D	I	N	S	M	L	W	W	N	N	U	V	L
I	Q	V	G	F	F	L	A	C	L	U	T	C	H	D	I	S	C	D	V
O	U	E	L	G	P	Q	S	V	W	L	L	S	E	N	F	Z	K	L	A
N	Z	S	D	Q	G	S	K	J	Y	M	N	A	E	N	W	Y	A	E	T
N	Z	H	A	J	J	D	L	N	C	B	T	H	L	B	Q	Z	P	Y	G
I	J	A	P	K	F	Q	Q	O	L	V	G	O	H	O	U	S	I	N	G
G	B	F	U	R	S	V	R	E	T	I	I	T	O	M	L	J	H	H	B
O	W	T	I	J	U	U	W	M	I	N	I	M	U	M	I	M	K	T	K
Q	F	B	V	A	E	C	M	P	G	R	P	U	S	C	Z	V	H	S	R
X	U	V	D	F	H	K	I	V	P	R	S	A	I	V	B	V	T	S	K
D	D	O	Y	S	Y	L	R	J	M	E	M	M	N	K	T	F	D	E	C
D	N	S	S	J	L	Z	M	I	F	M	A	H	G	N	N	F	X	S	Q

Can you find these?

FLYWHEEL HOUSING
DRIVE SHAFT
EXTENSION
CLUTCH DISC
MINIMUM
DIFFERENTIAL
HOUSING

ACROSS/DOWN

REPLACE TRANSMISSIONS

ANSWER KEY

```
E . . . . . . . . . . . . . . . . . . .
X . . . . . . . . . . . . . . . . . . .
T . . . . . . . . . . . . F . . . . . .
E . D I F F E R E N T I A L . . . . . .
N . R . . . . . . . . . . Y . . . . . .
S . I . . . . . . . . . . W . . . . . .
I . V . . . . . C L U T C H D I S C . .
O . E . . . . . . . . . . E . . . . . .
N . S . . . . . . . . . . E . . . . . .
. . H . . . . . . . . . . L . . . . . .
. . A . . . . . . . . . . H O U S I N G
. . F . . . . . . . . . . O . . . . . .
. . T . . . . . M I N I M U M . . . . .
. . . . . . . . . . . . . S . . . . . .
. . . . . . . . . . . . . I . . . . . .
. . . . . . . . . . . . . N . . . . . .
. . . . . . . . . . . . . G . . . . . .
```

REPLACE TRANSMISSIONS

Y A L Z S I Q O D F N G W R L P P P G F
C Z S C Y I Q A J G G M H N X Y U F F C
Z J V E T W J J I O P H V V N E Q W V K
U L P H K Q S G X X G J S O L J Y O Q G
M R C Q M P P K Q B N A H A B A A C Y O
A L U U V L Q O O B F Y I D U Y X C N N
M S Z U X W W C U C I T I M X F M E V Z
Q M Z B U I H F S Q N J T C F H H L T B
M B L A C I C I F E Q D A I C H I I E A
C S N T M I D E R T G B T F N H R J U G
C J Z J A H G E N N L F Z W G C R T N A
O B V J C I F W I P A E A U W F M I R Z
O T S T B F L Y W H E E L H O U S I N G
M F U H I A D A S S X S K W M U N X E Y
X L O D Q W Q E X T E N S I O N S A Q D
C Y C U O Y V W X R U G N H J E S K A M
X Q S Y H I K G U O O I I E W T H Z U V
E Q O W R V S K V Y M T W Z X W J P I L
Q J R D L Q E Y I X L H B I S R E K F D

Can you find these?

FLYWHEEL HOUSING
DRIVE SHAFT
EXTENSION
CLUTCH DISC
MINIMUM
DIFFERENTIAL
HOUSING

ACROSS/DOWN/DIAGONAL

REPLACE TRANSMISSIONS

ANSWER KEY

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. . . . .   . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . L . . . . .
. . . . . . . . . . . . . A . . . . . .
. . . . . . . . . . . . I . . . . . . .
. . . . . . . . . C . T . . . . . . . .
. . . . . . . . S . N . . . . . . . . .
. . . . . . . I . E . . . . . . . . . .
. . . . . . D . R . . . T . . . . . . G
. . . . . H . E . . . F . . . . . . N .
. . . . C . F . . . A . . . . . M I . .
. .   T . F L Y W H E E L H O U S I N G
. . U . I . . . S . . . . . M U . . . .
. L . D . . . E X T E N S I O N . . . .
C . . . . . V . . . . . N H . . . . . .
. . . . . I . . . . . I . . . . . . . .
. . . . R . . . . . M . . . . . . . . .
. . . D . . . . . . . . . . . . . . . .
```

REPLACING MANUAL TRANSMISSIONS

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1				2								XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	4										XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	5							XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	6							XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

1. a unit that will drive both rear axles at the same time
4. part of clutch assembly that is between the flywheel and clutch pressure plate (2 words)
5. the least
6. container or cover for mechanical parts

DOWN:

1. shaft that joins transmission output shaft to differential pinion shaft (2 words)
2. an addition added to something to increase its length

AM-43-16

REPLACING MANUAL TRANSMISSION

ACROSS:		DOWN:	
1.	DIFFERENTIAL	1.	DRIVESHAFT
4.	CLUTCHDISC	2.	EXTENSION
5.	MINIMUM		
6.	HOUSING		

```
              D I F F E R E N T I A L

              R       X

C L U T C H D I S C   T

              V       E

              E   M I N I M U M

              S       S

              H O U S I N G

              A       O

              F       N

              T
```

LEARNING WORDS USED IN SERVICING SPEEDOMETERS

INTRODUCTION

Speedometer cables break as a result of age, lack of lubrication or because the cable housing has sharp bends. Noisy and erratic speedometer operation can result from lack of lubrication. Speedometer drive gears may strip their teeth and/or break because of the above problems. Repair and service of speedometer drive mechanisms is a frequently required job for an auto mechanic. In this unit you will learn the technical vocabulary related to servicing speedometers.

PERFORMANCE OBJECTIVES

You will match 13 words used in servicing speedometers with their definitions. Your teacher will provide a list of words and definitions. You should match at least 10 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.

2. COVER **only** the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER **all** rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

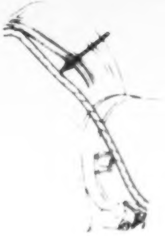
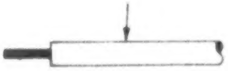
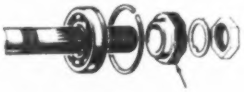
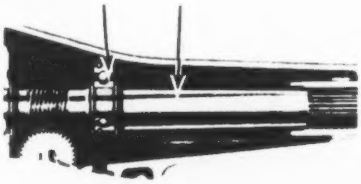
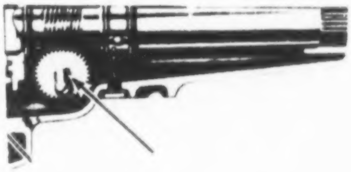
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

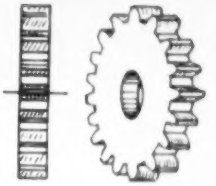
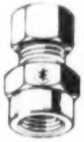
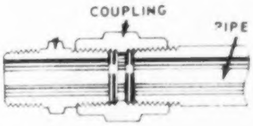
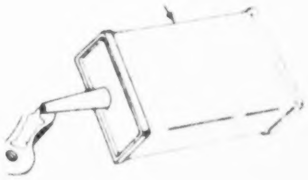
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

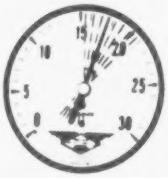
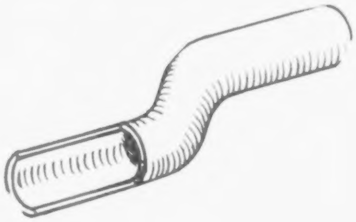
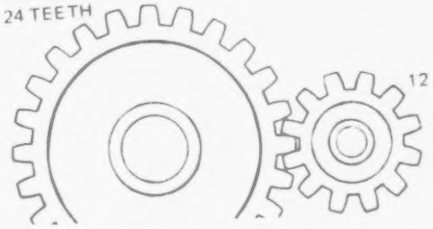
SPEEDOMETERS

speedometer (speed om e ter) cable (ca ble)	the cable that connects the speedometer in the dash with the speedometer drive pinion	
speedometer (speed om e ter) cable housing (ca ble hous ing)	the covering for the speedometer cable	
speedometer (speed om e ter) drive pinion (drive pin ion)	a gear that is turned by the transmission output shaft	
transmission (trans mis sion) output shaft (out put shaft)	the shaft from the transmission that connects with the yoke that turns the drive shaft	
pinion (pin ion)	small gear	

SPEEDOMETERS

cog wheel (cog wheel)	a wheel with grooved teeth	
adapter (a dap ter)	a device used to join two parts to allow them to work together	
ferrule (fer rule)	a metal ring or cap used to fasten a tubing	
graphite grease (graph ite grease)	a lubricant used on the speedometer cable	
O-ring (O-ring)	an O-shaped part used to seal fluid	

SPEEDOMETERS

erratic (er rat ic)	not constant	 10 15 20 5 25 0 30
flexible (flex i ble)	able to bend without breaking	
ratio (ra tio)	the relationship between objects given in numbers	

SPEEDOMETERS

G R A P H I T E G R E A S E W P V
F L E X I B L E P I N I O N H T V
N N K H S L J S C O G W H E E L S
C O W O P G Z U I T A D A P T E R
F E R R U L E G E N K C B W K U M
N G E M T W C H T E V L Q T K C P
N G M K T M M P U O A Y E M X G O
S O Z L R N U M Z H X Y D G Z F V
P T Y O M H D F M L U K Z Z I J B
S P E E D O M E T E R C M B X X I
N B L Y W C S D H J H X G G I Q W
E R R A T I C O R I N G T U E P G
G D R A T I O K H A H D F L G C L

Can you find these words?

GRAPHITE GREASE
COG WHEEL
ADAPTER
O-RING
SPEEDOMETER
FERRULE
PINION
FLEXIBLE
ERRATIC
RATIO

ACROSS

SPEEDOMETERS

ANSWER KEY

GRAPHITEGREASE...

FLEXIBLEPINION...

........COGWHEEL.

..........ADAPTER

FERRULE..........

....

....

....

....

SPEEDOMETER......

....

ERRATICORING.....

..RATIO..........

SPEEDOMETERS

H	W	X	R	N	X	J	Z	X	R	K	B	P	K	W	J
S	F	T	B	W	Y	K	Q	N	A	G	H	Q	B	Z	K
C	S	H	H	O	R	D	X	R	T	Q	T	E	G	X	R
G	D	Z	L	H	I	H	R	W	I	R	I	P	F	Y	S
A	S	K	Y	R	X	Z	O	C	O	G	W	H	E	E	L
S	P	E	E	D	O	M	E	T	E	R	L	R	S	X	M
T	Y	Y	M	B	D	Z	A	E	X	A	A	L	K	R	V
L	R	Z	U	R	R	Z	L	U	A	P	I	N	I	O	N
N	U	N	I	R	H	X	T	B	Z	H	T	S	X	R	P
V	A	Y	W	B	R	F	L	E	X	I	B	L	E	I	K
B	N	S	G	M	Q	E	R	R	A	T	I	C	Q	N	N
B	W	S	S	U	V	R	H	N	D	E	V	H	J	G	Q
K	U	J	G	S	T	R	Y	Z	A	G	U	T	I	K	G
K	G	P	B	Z	U	U	X	F	P	R	D	Z	D	I	P
V	G	U	N	U	J	L	R	I	T	E	J	K	Q	S	Q
P	F	M	T	P	N	E	E	E	E	A	D	R	E	E	V
C	A	B	P	Q	C	X	T	E	R	S	N	I	H	E	A
L	U	D	X	D	P	N	W	B	T	E	E	P	H	S	F

Can you find these words?

GRAPHITE GREASE
COG WHEEL
ADAPTER
O-RING

SPEEDOMETER
FERRULE
PINION

FLEXIBLE
ERRATIC
RATIO

ACROSS/DOWN

SPEEDOMETERS

ANSWER KEY

```
. . . . . . . . . R . . . . . .
. . . . . . . . . A . . . . . .
. . . . . . . . . T . . . . . .
. . . . . . . . . I . . . . . .
. . . . . . . . C O G W H E E L
S P E E D O M E T E R . . . . .
. . . . . . . . . . A . . . . .
. . . . . . . . . . P I N I O N
. . . . . . . . . . H . . . R .
. . . . . . F L E X I B L E I .
. . . . . . E R R A T I C . N .
. . . . . . R . . D E . . . G .
. . . . . . R . . A G . . . . .
. . . . . . U . . P R . . . . .
. . . . . . L . . T E . . . . .
. . . . . . E . . E A . . . . .
. . . . . . . . . R S . . . . .
. . . . . . . . . . E . . . . .
```

SPEEDOMETERS

E Z S A F J X W N H U L Q Q D C G M T C D
R P W N L F Q K A Y R J M B E R R A T I C
V U Y B A O G Q O R E U O S H E A W D Y Q
N H G R O F J X Y V X S B O T Q P I T J L
G K S A X B G L H T J F F E M N H I Z N Y
Z C P T D M I Q O I J E M X T N I J D X H
E R E I E A S E M F Z O B H N R T R S D K
G W H O O K P V M R D S H S N B E W M P E
I K K G U G M T K E W C P A V E G K F Q Y
H N D E K A F L E X I B L E M H R U X N E
J K I M F A E P P R A F C K O P E T T H J
O R D K D E S M I N F X C S Q P A C I W K
L F E J H A R G Y N E P R J U I S F B S L
Z T C W V Y R R I G I N N I U G E T R P U
Q S G F B L R Q U R Q O G M E S W L M R U
T O R I N G H K X L D O N S I G H Q S M V
C Z Q Q M D T L S N E B L E Y Z Y F T W R

Can you find these words?

GRAPHITE GREASE
COG WHEEL
ADAPTER
O-RING

SPEEDOMETER
FERRULE
PINION

FLEXIBLE
ERRATIC
RATIO

ACROSS/DOWN/DIAGONAL

SPEEDOMETERS

ANSWER KEY

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. . . . . . . . . . . . . . . . G . . . .
. . . . . . . . . . . . . . E R R A T I C
. . . . . . . . . . . . . . . E A . . . .
. . . R . . . . . . . . . . T . P . . . .
. . . A . . . . . . . . . E . . H . . . .
. . . T D . . . . . . . M . . . I . . . .
. . . I . A . . . . . O . . . . T . . . .
. . . O . . P . . . D . . . . . E . . . .
. . . . . . . T . E . . . . . . G . . . .
. . . . . . F L E X I B L E . . R . . . .
. . . . F . E P . R . . . . . . E . . . .
. . . . . E S . I . . . . . . . A . . . .
. . . . H . R . . N . . . . . . S . . . .
. . . W . . . R . . I . . . . . E . . . .
. . G . . . . . U . . O . . . . . . . . .
. O R I N G . . . L . . N . . . . . . . .
C . . . . . . . . . E . . . . . . . . . .
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SERVICING SPEEDOMETERS

XX XX	XX XX	XX XX	XX XX	1						2	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	3					XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	4	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	5								XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	6							XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	7					XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

1. not constant
3. an O-shaped part used to seal fluid (-)
5. able to bend without breaking
6. a device used to join two parts to allow them to work
7. the relationship between objects given in numbers

DOWN:

2. a wheel with grooved teeth (2 words)
4. small gear
5. a metal ring or cap used to fasten a tubing

SERVICING SPEEDOMETERS

ANSWER KEY

ACROSS:

1. ERRATIC
3. ORING
5. FLEXIBLE
6. ADAPTER
7. RATIO

DOWN:

2. COGWHEEL
4. PINION
5. FERRULE

```
  E R R A T I C
              O R I N G
              G
              W
              H
              E
              E     P
            F L E X I B L E
            E       N
A D A P T E R       I
            R A T I O
            U       N
            L
            E
```

LEARNING WORDS USED IN SERVICING PARKING BRAKES

INTRODUCTION

All modern automobiles are equipped with a parking brake. These parking brakes are relatively maintenance-free except for routine adjustments or replacement of the brake linings and/or replacing or freeing oxidized flexible wire cables and conduits. Periodically, due to driving conditions or mishaps, the cables or linkage must be replaced. In this unit you will learn the technical vocabulary related to servicing parking brakes.

PERFORMANCE OBJECTIVES

You will match 17 words used in servicing parking brakes with their definitions. Your teacher will provide a list of words and definitions. You should match at least 14 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.

2. COVER **only** the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER **all** rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.

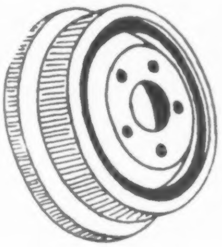
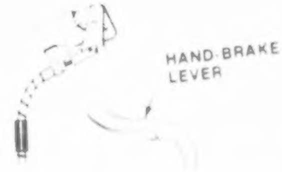
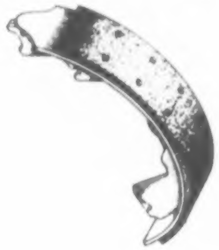
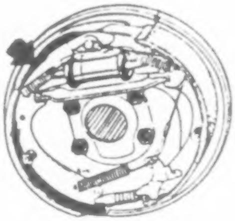
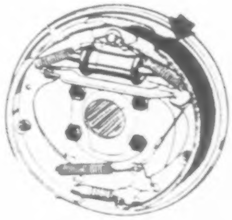
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.

3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.

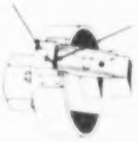
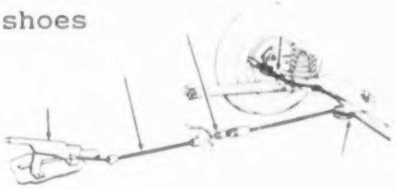
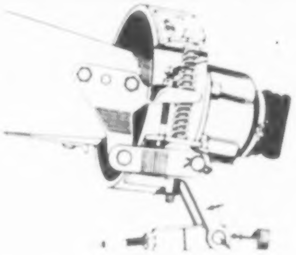
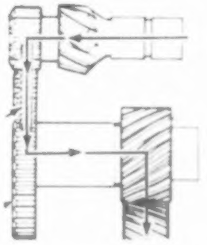
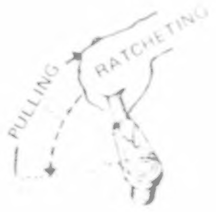
4. USE the Answer Key on the back as a self-check.

5. STUDY the words that were a problem.

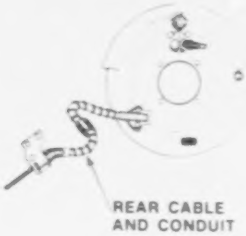
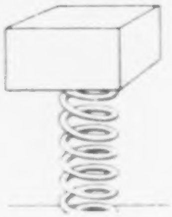
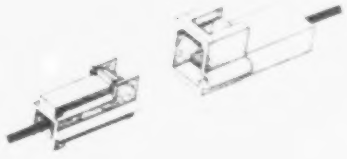
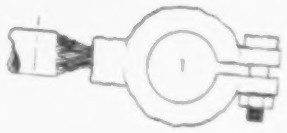
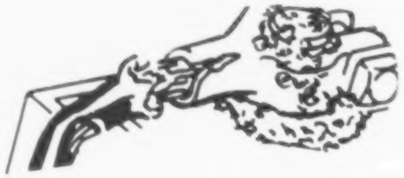
PARKING BRAKES

brake drum (brake drum)	a metal cylinder that bolts to the wheel and covers the brake shoes	
parking brake (park ing brake) lever (le ver)	the handle worked by hand to hold the vehicle while parked	
brake shoe (brake shoe)	a curved metal block that presses against the brake drum to slow the wheel	
primary brake (pri mar y brake) shoe (shoe)	the brake shoe installed facing the front of the vehicle	
secondary (sec ond ar y) brake shoe (brake shoe)	the brake shoe installed facing the rear of the vehicle	

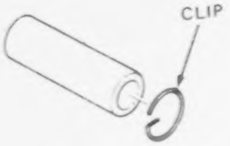
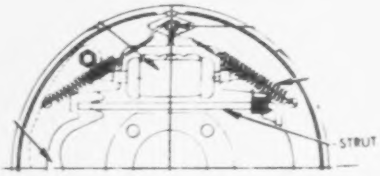
PARKING BRAKES

brake bands (brake bands)	a band that circles around the outside of a brake drum	
parking brake (park ing brake) linkages (link a ges)	joins handle and brake shoes	
drive line (drive line) parking brakes (park ing brakes)	parking brake on drive shaft	
engage (en gage)	to mesh together to work	
actuated (ac tu ated)	put into motion	

PARKING BRAKES

conduits (con duits)	flexible tubing covers for the parking brake cables	
compress (com press)	to apply pressure to make something smaller	
disconnect (dis con nect)	to unplug or separate	
frayed (frayed)	worn out on the edges	
oxidized wire (ox i dized wire)	wire that is rusty or scaled	

PARKING BRAKES

retaining clip (re tain ing clip)	a metal band that is used to hold parts	
strut (strut)	a type of rod or bar that braces	

PARKING BRAKES

R E T A I N I N G C L I P N T W F Z N F E

E F W R I S I D W L I N W W T J E X G I U

B R A K E S H O E U C E E A R F S P U Z N

T W J P K U A B R A K E L E V E R Q D V Q

K F U H H P P W R A T U O V L L T D N B M

B R A K E D R U M E N G A G E U W X D Z V

S A G X C B Q F K X I U G U C E A J N X N

F C I L L V Y T I A U G A X O G O P B Y Z

Z G K I O W Y N Z X V C A I F M S X K H I

A C T U A T E D K W M D X T K M U O J Z G

G B L X S T N W B W N V S T R U T Z U X Y

G S X W G N T K W O Z U F C H D R Z V W W

V N Q M L E U G S G G Q I C O N D U I T S

T N J D I S C O N N E C T F R A Y E D U X

C Q B W R L N I J O E V Z W B C L V G B D

T U H R L C E S P B R A K E B A N D S P Q

O X I D I Z E D W I R E H L F N D K P U S

B V I O X T M M D N E C U C O M P R E S S

Can you find these words?

RETAINING CLIP
BRAKE LEVER
BRAKE SHOE
COMPRESS
ENGAGE

OXIDIZED WIRE
BRAKE BANDS
BRAKE DRUM
ACTUATED

DISCONNECT
CONDUITS
FRAYED
STRUT

ACROSS

PARKING BRAKES

ANSWER KEY

```
R E T A I N I N G C L I P . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
B R A K E S H O E . . . . . . . . . . . .
. . . . . . . B R A K E L E V E R . . . .
. . . . . . . . . . . . . . . . . . . . .
B R A K E D R U M E N G A G E . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . .
A C T U A T E D . . . . . . . . . . . . .
. . . . . . . . . . . . S T R U T . . . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . C O N D U I T S
. . . D I S C O N N E C T F R A Y E D . .
. . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . B R A K E B A N D S . .
O X I D I Z E D W I R E . . . . . . . . .
. . . . . . . . . . . . . C O M P R E S S
```

PARKING BRAKES

X V B I M T I J B Y A T F W Z E

Y V A O Y V P Y R P L X A E U Q

A H D X D D X K A K B I C B G U

P K Z I W U C Z K Z T K M O L C

R R P D D I S I E E L W I S E O

V K B I I R K N S D C Q B K Q M

Y R B Z S Z N A H D C R Y U C P

W D H E C W B E O M Y U Y O O R

S O H D O B G F E A L Q F I N E

A S Y W N U B R A K E B A N D S

X U Z I N B R A K E D R U M U S

O W S R E T A I N I N G C L I P

V V W E C A K N W O J J B B T D

S T R U T N E N G A G E J J S E

A P E L X R L Q W Y K F N I B K

A C T U A T E D V T L P Z K L U

M P A L Q Z V V L X P O G Z N K

K G F R A Y E D M T M X N C Z C

X B J S U O R B V D D T G E V E

Can you find these words?

RETAINING CLIP
BRAKE LEVER
BRAKE SHOE
COMPRESS
ENGAGE

OXIDIZED WIRE
BRAKE BANDS
BRAKE DRUM
ACTUATED

DISCONNECT
CONDUITS
FRAYED
STRUT

ACROSS/DOWN

PARKING BRAKES

ANSWER KEY

```
. . . . . . . . B . . . . . . .
. . . O . . . . R . . . . . . .
. . . X . . . . A . . . . . . .
. . . I . . . . K . . . . . . C
. . . D D . . . E . . . . . . O
. . . I I . . . S . . . . . . M
. . . Z S . . . H . . . . . C P
. . . E C . . . O . . . . . O R
. . . D O . . . E . . . . . N E
. . . W N . B R A K E B A N D S
. . . I N B R A K E D R U M U S
. . . R E T A I N I N G C L I P
. . . E C . K . . . . . . . T .
S T R U T . E N G A G E . . S .
. . . . . . L . . . . . . . . .
A C T U A T E D . . . . . . . .
. . . . . . V . . . . . . . . .
. . F R A Y E D . . . . . . . .
. . . . . . R . . . . . . . . .
```

PARKING BRAKES

Z B L V U N V S B S W F G Z R S V E P N P

F P R E A O T S N A T P L V O V S C Z I G

P D R D D I S C O N N E C T I Y S Z L T F

U I N L U E T G X E Q B U R R N Y C I C G

H P E D R V R W I S I X E Q E I G S J K Z

Q X N P A L U D D P L V X O A N D C A T W

G O M W X G T N I A E P R K I E M W B Q F

C O Z R V U A K Z L X W Y N T S Z S Q T G

C V H R S B I F E F H Z I A X I G C F C K

G O G O E U H K D I S A U Q C I S B D M M

Q G K K B D A V W B T T E B D W A L H X A

E M A G E R J I I E C J T S T U D G D P G

S R B Y B W A B R A K E S H O E C A A G M

B F A Q W I L K E Y S P Z C K G W C T F E

L R G X I I J Y E V I J V P B O O R R M W

F A P G W I N B N D N X O R D Z L M J Y I

G O Q T O Q U V C S R G D U F R K J W R E

T E R G E N G A G E G U E M B P U H T T D

A J O K Y Q K W V M O W M N E K C B Y U N

Can you find these words?

RETAINING CLIP
BRAKE LEVER
BRAKE SHOE
COMPRESS
ENGAGE
OXIDIZED WIRE
BRAKE BANDS
BRAKE DRUM
ACTUATED
DISCONNECT
CONDUITS
FRAYED
STRUT

ACROSS/DOWN/DIAGONAL

PARKING BRAKES

ANSWER KEY

```
. . . . . . . S . . . . . . . . . . . . P
. . . . . . T S . . . . . . . . . . . I .
. . . . D I S C O N N E C T . . . . L . .
. . . . U E T . X . . . . R . . . C . . .
. . . D R . R . I S . . E . . . G . . . .
. . N P . . U . D . . V . . . N D . . . .
. O M . . . T N I . E . . . I E . . . . .
C O . . . . A . Z L . . . N T . . . . . .
C . . . . B . . E . . . I A . . . . . . .
. . . . E . . K D . . A U . . . . . . . .
. . . K B D A . W . T T . . . . . . . . .
. . A . E R . . I E C . . . . . . . . . .
. R . Y B . A B R A K E S H O E . . . . .
B . A . . . . K E . . . . . . . . . . . .
. R . . . . . . E . . . . . . . . . . . .
F . . . . . . . . D . . . . . . . . . . .
. . . . . . . . . . R . . . . . . . . . .
. . . . E N G A G E . U . . . . . . . . .
. . . . . . . . . . . . M . . . . . . . .
```

PARKING BRAKES I

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1									XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	2						XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	3								XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	4								XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

1. a metal cylinder that bolts to the wheel and covers the brake shoes (2 words)
2. mesh together to work
3. to apply pressure to make something smaller
4. put into motion

DOWN:

1. a curved metal block that presses against the brake drum to slow the wheel (2 words)
3. flexible tubing covers for parking brake cables

AM-45-19

PARKING BRAKES I

ANSWER KEY

ACROSS:		DOWN:	
1.	BRAKEDRUM	1.	BRAKESHOE
2.	ENGAGE	3.	CONDUITS
3.	COMPRESS		
4.	ACTUATED		

```
              B R A K E D R U M
              R
        E N G A G E
              K
    C O M P R E S S
    O         S
    N         H
    D         O
    U         E
    I
A C T U A T E D
    S
```

PARKING BRAKES II

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	2	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX	3	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	4						XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	5													XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	6					XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

4. worn out on the edges
5. a metal band that is used to hold parts (2 words)
6. a type of rod or bar

DOWN:

1. wire that is rusty or scaled (2 words)
2. to unplug or separate
3. a band that circles around a brake drum (2 words)

PARKING BRAKES II

ANSWER KEY

ACROSS:

4. FRAYED
5. RETAININGCLIP
6. STRUT

DOWN:

1. OXIDIZEDWIRE
2. DISCONNECT
3. BRAKEBANDS

```
O
X   D
I   I
D   S     B
I   C   F R A Y E D
Z   O     A
E   N     K
D   N     E
W   E     B
I   C     A
R E T A I N I N G C L I P
E         D
          S T R U T
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LEARNING WORDS USED IN REPAIRING AIR CONDITIONING CONTROLS

INTRODUCTION

There are times when the mechanic will be required to repair air conditioning controls, especially in the warm months of the year when units are being used more frequently. In this unit you will learn the technical vocabulary related to repairing air conditioning controls.

PERFORMANCE OBJECTIVES

You will match 14 words used in repairing air conditioning controls with their definitions. Your teacher will provide a list of words and definitions. You should match at least 11 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.

2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.

3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.

4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.

5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

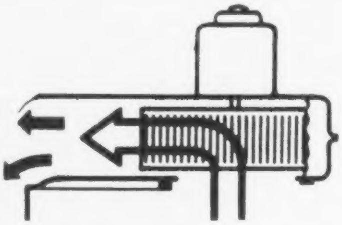
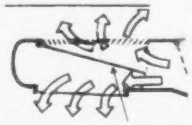
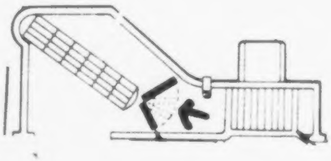
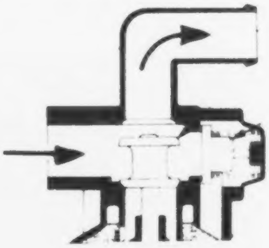
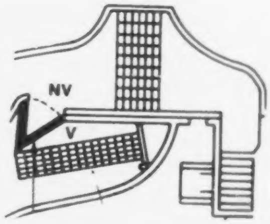
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

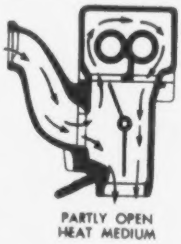
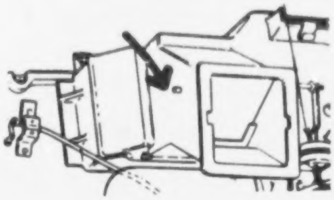
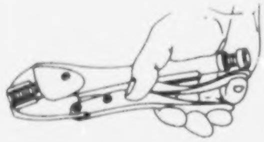
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

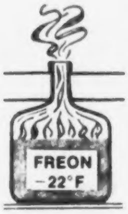
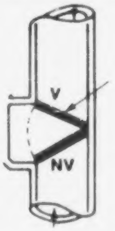
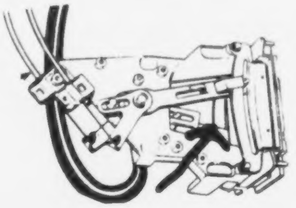
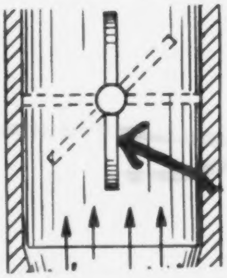
AIR CONDITIONING CONTROLS

deflected (de flect ed)	curved, changed, or bent from the original shape	
diverted (di vert ed)	turned aside	
double action (dou ble ac tion) vacuum door (vac u um door)	controls air flow between several ducts	
heater control (heat er con trol) valve (valve)	valve that controls the flow of coolant through the heater core	
mode doors (mode doors)	valve that selects between heater and air conditioning	

AIR CONDITIONING CONTROLS

partial (par tial)	not complete	
plenum (ple num)	a chamber that collects air under pressure inside vehicle duct	
pneumatic (pneu mat ic)	operated by air	
ports (ports)	small openings in engine manifold and heads	
posi-grip (pos i-grip)	positive grip or sure grip	

AIR CONDITIONING CONTROLS

refrigerant (re frig er ant)	a liquid that turns into vapor at a low temperature	
temperature door (tem per a ture door)	controls air flow in ducts	
vacuum control (vac u um con trol) device (de vice)	controls the opening and closing of the doors	
valve (valve)	a device that will open or close an opening	

AIR CONDITIONING CONTROLS

T	E	M	P	E	R	A	T	U	R	E	D	O	O	R	I	G	I	F	E
L	C	K	L	X	J	D	K	N	N	P	T	F	K	S	X	M	S	Q	I
T	H	Z	S	Z	Q	F	V	A	L	V	E	W	O	H	S	S	I	F	Q
J	S	Y	D	D	R	O	C	F	X	D	E	N	F	R	W	J	O	U	O
D	I	V	E	R	T	E	D	R	F	U	N	G	J	P	R	X	S	Z	W
R	E	F	R	I	G	E	R	A	N	T	F	S	T	S	J	V	T	N	L
V	A	C	U	U	M	P	O	T	L	Y	L	D	S	F	I	D	K	R	D
M	O	D	E	D	O	O	R	S	O	C	U	C	X	P	Y	K	H	S	F
P	N	E	U	M	A	T	I	C	V	K	T	O	M	P	L	E	N	U	M
I	Q	H	T	Z	P	A	G	C	W	D	J	F	R	P	H	J	N	U	T
C	Y	C	G	M	O	B	U	C	X	V	M	P	O	R	T	S	H	W	X
U	B	A	V	K	Y	S	V	E	H	C	Z	B	G	Y	Q	D	H	E	X
Y	W	P	P	R	H	J	V	Z	Q	S	N	B	T	O	B	L	A	K	R
M	A	M	S	U	M	I	V	P	O	S	I	G	R	I	P	X	I	P	B
A	A	I	N	U	I	J	Y	D	N	N	J	P	P	S	S	V	A	F	X
J	N	Q	U	L	C	Y	I	B	A	N	R	U	F	K	B	Q	C	H	A
V	Y	C	O	Z	J	P	X	W	H	E	H	N	J	P	W	B	M	P	K
T	U	V	D	X	P	U	L	I	R	X	L	H	O	P	H	B	Y	C	E
O	D	E	F	L	E	C	T	E	D	P	A	R	T	I	A	L	L	K	C

Can you find these words?

TEMPERATURE DOOR
PNEUMATIC
POSI-GRIP
PLENUM
REFRIGERANT
MODE DOORS
DIVERTED
VALVE
VACUUM POT
DEFLECTED
PARTIAL
PORTS

ACROSS

AIR CONDITIONING CONTROLS

ANSWER KEY

```
T E M P E R A T U R E D O O R . . . . .
. . . . . . . . . . . . . . . . . . . .
. . . . . . . V A L V E . . . . . . . .
. . . . . . . . . . . . . . . . . . . .
D I V E R T E D . . . . . . . . . . . .
R E F R I G E R A N T . . . . . . . . .
V A C U U M P O T . . . . . . . . . . .
M O D E D O O R S . . . . . . . . . . .
P N E U M A T I C . . . . . P L E N U M
. . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . P O R T S . . .
. . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . .
. . . . . . . . P O S I G R I P . . . .
. . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . .
. D E F L E C T E D P A R T I A L . . .
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AIR CONDITIONING CONTROLS

A P L U K N W S Z R L G M K Y Z K Z C

B N I F Z P D I V E R T E D G Z Y Q W

R E F R I G E R A N T W K X M L S R F

L U G D E F L E C T E D N E X P U I S

W M L O S T B E U J M O D E D O O R S

O A V Q V Z J Y U T P O S I G R I P D

P T A H C G C V M V E N B L P T C L H

C I H I C Y X H P A R T I A L S A N Z

Y C X X X A R D O L A M P E E N F Z H

W C O A H N U P T V T T G L N K E N I

J T D M C C I Y P E U A Z O U C X C P

B M S L J Q V L J K R H D A M Y M A D

U K G V V J W K X D E D C O P R Q G H

C U U G E R W X M L D O Y L R C U U J

S X Z F W X I M U C O X E J C A Z E D

L N G F Q Q K L X Q O L O L D T P Q X

A P V W R D L G C F R Q H K I V R D U

Can you find these words?

TEMPERATURE DOOR
PNEUMATIC
POSI-GRIP
PLENUM
REFRIGERANT
MODE DOORS
DIVERTED
VALVE
VACUUM POT
DEFLECTED
PARTIAL
PORTS

ACROSS/DOWN

AIR CONDITIONING CONTROLS

ANSWER KEY

. P . . . .
. N . . . . D I V E R T E D . . . . .
R E F R I G E R A N T . . . .
. U . D E F L E C T E D . . . P . . .
. M . . . . . . U . M O D E D O O R S
. A . . . . . . U . P O S I G R I P .
. T . . . . . . M V E . . . P T . . .
. I . . . . . . P A R T I A L S . . .
. C . . . . . . O L A . . . E . . . .
. . . . T V T . . . N . . . .
. . . . E U . . . U . . . .
. . . . R . . . M . . . .
. . . . E . . . .
. . . . D . . . .
. . . . O . . . .
. . . . O . . . .
. . . . R . . . .

AIR CONDITIONING CONTROLS

S E Z W Q B G G P U J D A U R S H I G Z K

F K J P K E N I J A C Y U O Q F A C S C Q

A D D I V E R T E D C P H D N H V C U Y N

M W J L G G E B P E A G F T S A E B Q U K

M E A M I A F H J I A L O T M K O H S C Q

W V W S X V R I F A O P R M D P J U Z K L

D U O O H K I T R M M O D E D O O R S L J

X P I Y F B G M T U P W T B W J L J W R L

T P O I H E E H U E C C A I G A N E Q P A

K S S E Y M R C N Y E Y S G C T G G N B F

X X R I Y V A E C L K E K M I C W N X Q H

O I M Y L V N I F V M N S M Q S G L K O S

V J F I J R T E M P E R A T U R E D O O R

Q U F T J A D U D L W C E Y B U L B P X Q

T E T M M H N J C N I O X Z A R A G W L B

V R L U K E K H W E T A D V T O O N C Y S

P Z E E L B T G Z M A W H I M N C S L Q P

F N G P N F E B L Z F T R I I V Q O N A C

P A R T I A L P W D E S N I D U C X G K D

Can you find these words?

TEMPERATURE DOOR
PNEUMATIC
POSI-GRIP
PLENUM

REFRIGERANT
MODE DOORS
DIVERTED
VALVE

VACUUM POT
DEFLECTED
PARTIAL
PORTS

ACROSS/DOWN/DIAGONAL

AIR CONDITIONING CONTROLS

ANSWER KEY

```
. . . . . . . . P . . . . . . . . . . . .
. . . . . E . I . . . . . . . . . . . . .
. . D I V E R T E D . . . . . . . . . . .
. . . L . G E . . . . . . T S . . . . . .
. . A . I . F . . . . . O T . . . . . . .
. V . S . . R . . . . P R . D . . . . . .
. . O . . . I . . . M O D E D O O R S . .
. P . . . . G . . U P . T . . . . . . . .
. . . . . . E . U . . C . . . . . . . . .
. . . . . . R C . . E . . . . . . . . . .
. . . . . . A . C L . . . . . . . . . . .
. . . . . V N I F . . . . . . . . . . . .
. . . . . . T E M P E R A T U R E D O O R
. . . . . A D U . . . . . . . . . . . . .
. . . . M . N . . . . . . . . . . . . . .
. . . U . E . . . . . . . . . . . . . . .
. . E . L . . . . . . . . . . . . . . . .
. N . P . . . . . . . . . . . . . . . . .
P A R T I A L . . . . . . . . . . . . . .
```

AIR CONDITIONING I

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	1	XX XX	2						XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	3	XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	4									XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	5					XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

2. a chamber that collects air or gas under pressure inside vehicle duct
4. curved, changed, or bent
5. openings in the engine manifold and heads

DOWN:

1. changed or turned aside
2. not completed
3. operated by air

AIR CONDITIONING I

ANSWER KEY

ACROSS:		DOWN:	
2.	PLENUM	1.	DIVERTED
4.	DEFLECTED	2.	PARTIAL
5.	PORTS	3.	PNEUMATIC

```
            D   P L E N U M
      P     I   A
      N     V   R
    D E F L E C T E D
      U     R   I
      M     T   A
      A     E   L
P O R T S   D
      I
      C
```

AIR CONDITIONING II

XX XX	XX XX	1		2			XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	3								XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	4	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	5															XX XX	XX XX

ACROSS:

1. openings in engine manifold and heads
3. POSItive grip or sure grip (-)
5. controls air flow in ducts (2 words)

DOWN:

2. a liquid that turns into vapor at a low temperature
4. a device that will open or close an opening

AIR CONDITIONING II

ANSWER KEY

ACROSS:		DOWN:	
1.	PORTS	2.	REFRIGERANT
3.	POSIGRIP	4.	VALVE
5.	TEMPERATUREDOOR		

```
  P O R T S
      E
      F
      R
P O S I G R I P
      G
      E       V
      R       A
      A       L
      N       V
      T E M P E R A T U R E D O O R
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LEARNING WORDS USED IN REPLACING HEATER CORE AND HOSES

INTRODUCTION

There are times when the mechanic will be required to replace heater cores and hoses, especially during the cold months when heaters are used more often. In this unit you will learn the technical vocabulary related to replacing heater cores and hoses.

PERFORMANCE OBJECTIVES

You will match 8 words used in replacing heater cores and hoses with their definitions. Your teacher will provide a list of words and definitions. You should match at least 6 words with their correct definitions.

LEARNING ACTIVITIES

Give the student(s) a study sheet for vocabulary. Review with the student(s) the following instructions:

1. COVER each definition and picture and LOOK AT the vocabulary word. LISTEN to the pronunciation of the word. Now READ (and WRITE) it.
2. COVER only the definition of each vocabulary word. LOOK AT each word and picture (if there is one). SAY the word to yourself.
3. COVER all rows of words, definitions, and pictures except one. LOOK AT the word, definition, and picture. LISTEN to the definition as it is read to you. Now READ (and WRITE) the definition.
4. COVER each vocabulary word and LOOK AT the definition. SAY (or WRITE) the vocabulary word for that definition. UNCOVER the word to see if you are correct.
5. COVER each definition and LOOK AT the vocabulary word. SAY (or WRITE) the definition for that vocabulary word. UNCOVER the definition to see if you are correct.

6. STUDY each vocabulary word on the page individually. COVER all the definitions on the page and LOOK AT the vocabulary words. SAY (or WRITE) the definitions in your own words. UNCOVER the definitions to see if you are correct.

7. COVER all vocabulary words and LOOK AT the definitions. SAY (or WRITE) the vocabulary words. UNCOVER the words to see if you are correct.

8. COVER all definitions and LOOK AT the vocabulary words. SAY (or WRITE) the definitions. UNCOVER the definitions to see if you are correct.

9. LOOK AT (or LISTEN TO) the vocabulary word. USE the word in a sentence.

10. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to one another

11. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the unit.

12. LOOK AT the vocabulary study sheet. TALK about how the vocabulary words relate to the classroom modules.

13. MATCH the vocabulary words used in this unit with the correct definitions as a final activity.

ADDITIONAL ACTIVITIES

WORD FIND

1. USE this activity after all the vocabulary words in one unit have been studied.

2. SELECT the activity sheet with the degree of difficulty that is appropriate: (1) Across, (2) Across-Down, or (3) Across-Down-Diagonal, as shown on the bottom of each activity page.

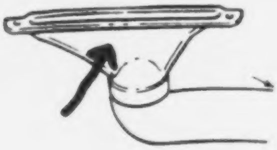
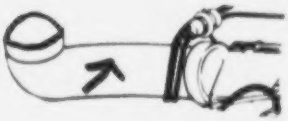
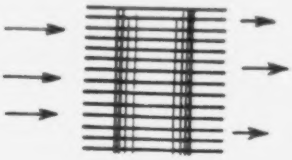
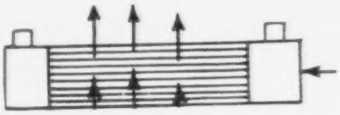
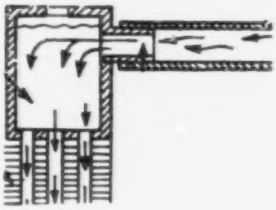
3. FIND each word from the list of terms and CIRCLE it in the block of letters. CHECK OFF (X) each word in the list as it is found.

4. USE the Answer Key on the back of the activity page when needed.

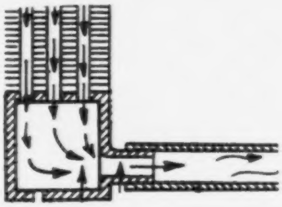
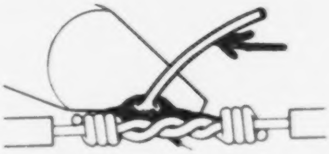
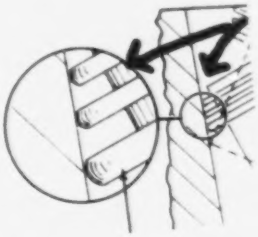
CROSSWORD

1. USE this activity after the vocabulary words in one unit have been learned.
2. READ (or LISTEN TO) each clue, which is the definition of a word that has been studied.
3. WRITE in the puzzle the vocabulary word that matches the definition. CHECK OFF (X) each clue as it is matched to the word.
4. USE the Answer Key on the back as a self-check.
5. STUDY the words that were a problem.

HEATER CORE AND HOSES

defroster hose (de frost er hose)	hose that brings air to the windshield vents	
duct (duct)	large tube that carries air	
fins (fins)	the plates on the outside of the heater core to transfer heat to the air	
heater core (heat er core)	unit through which hot water flows	
inlet tubes (in let tubes)	brings hot water into heater core	

HEATER CORE AND HOSES

outlet tubes (out let tubes)	brings water back to the cooling system	
solder (sol der)	to join metal with soft metal alloy that melts at a low temperature	
vicinity (vi cin i ty)	within a specified area or location	

HEATER CORE AND HOSES

D	E	F	R	O	S	T	E	R	H	O	S	E	L	E	D
S	K	P	N	Z	K	S	F	X	U	K	P	O	R	E	N
Z	Z	Q	I	I	F	I	N	S	Z	K	L	C	E	I	J
E	A	W	Q	T	E	Z	L	T	L	G	C	A	K	M	O
O	V	V	I	C	I	N	I	T	Y	L	T	I	F	X	B
G	S	V	X	M	U	B	B	C	I	M	Y	I	F	E	T
L	I	N	L	E	T	T	U	B	E	S	I	Q	C	K	E
M	G	D	Q	V	W	Y	K	J	A	P	Z	D	X	J	S
P	S	L	W	C	C	M	K	O	A	E	R	E	G	U	F
G	F	V	E	P	H	A	Y	J	B	A	J	I	M	A	W
B	L	K	D	U	C	T	Y	N	V	C	C	Y	W	F	F
O	U	T	L	E	T	T	U	B	E	S	G	T	T	J	Q
R	A	B	W	Z	D	Z	T	Q	N	T	K	Z	O	N	O
S	Y	I	N	K	D	Q	X	P	Y	X	M	A	U	C	F
B	O	V	S	L	Y	Y	U	R	L	D	Z	N	X	F	H
S	S	G	O	H	A	J	Q	V	Q	G	K	Y	I	D	P
O	V	T	K	X	S	W	U	Z	F	Y	D	I	N	O	M
W	J	I	S	Q	F	V	H	F	R	A	P	Y	O	E	P
H	E	A	T	E	R	C	O	R	E	S	O	L	D	E	R

Can you find these words?

DEFROSTER HOSE
HEATER CORE
FINS
OUTLET TUBES
VICINITY
DUCT
INLET TUBES
SOLDER

ACROSS

HEATER CORE AND HOSES

ANSWER KEY

```
D E F R O S T E R H O S E . . .
. . . . . . . . . . . . . . . .
. . . . . F I N S . . . . . . .
. . . . . . . . . . . . . . . .
. . V I C I N I T Y . . . . . .
. . . . . . . . . . . . . . . .
. I N L E T T U B E S . . . . .
. . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . .
. . . D U C T . . . . . . . . .
O U T L E T T U B E S . . . . .
. . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . .
H E A T E R C O R E S O L D E R
```

HEATER CORE AND HOSES

L W R D F B W L V Y B J D L R R C
Q F V B S M O F I N S T Y U Z F E
G M O T E V L Y C U S W X T V E I
G U Y W J G B O I E C B T I X C M
W J E P E C S E N T J U D N P N M
Z A A I I E P D I T D U H O F U X
A T I P Q B O U T L E T T U B E S
V R H B K U Y C Y Y F E Y C K Q J
B Z V Q Z C D T W T R Z I R M Z U
X D I G H [illegible] [illegible] C C Y O J R Q N Y N
B I N L E T T U B E S L W K L H Q
N Q X I A R U J S O T P F F W U W
K D Q Q T K K H R V E L G Q H O M
S O L D E R I G S E R L G N W F H
V W N G R D S A F Z H N W Z O S F
Z G S G C U D M B B O U C S A L J
H Z N S O Z H L S Q S O Y D T E G
C S C D R V H Q P E E W O Y R H I
F K Q D E Y N E X I L Y S S U N R

Can you find these words?

DEFROSTER HOSE
HEATER CORE
FINS
OUTLET TUBES
VICINITY
DUCT
INLET TUBES
SOLDER

ACROSS/DOWN

HEATER CORE AND HOSES

ANSWER KEY

```
. . . . . . . . V . . . . . . . .
. . . . . . . F I N S . . . . . .
. . . . . . . . C . . . . . . . .
. . . . . . . . I . . . . . . . .
. . . . . . . . N . . . . . . . .
. . . . . . . D I . D . . . . . .
. . . . . . O U T L E T T U B E S
. . . . . . . C Y . F . . . . . .
. . . . . . . T . . R . . . . . .
. . . . H . . . . . O . . . . . .
. I N L E T T U B E S . . . . . .
. . . . A . . . . . T . . . . . .
. . . . T . . . . . E . . . . . .
S O L D E R . . . . R . . . . . .
. . . . R . . . . . H . . . . . .
. . . . C . . . . . O . . . . . .
. . . . O . . . . . S . . . . . .
. . . . R . . . . . E . . . . . .
. . . . E . . . . . . . . . . . .
```

HEATER CORE AND HOSES

K B D T L W P C U G K O K S I O I S

L Q R W A S O N N Q Z O Y B S C E O

H E A T E R C O R E E A Y U T B P H

P O Q X Z A R D U D X G B C U E X M

Y R W T B F Z Y A T I I U T X I W Z

N N Y D F P A Q L R L D T H O E Z J

G W Q T B T M S O L D E R X I H Z V

X P I E U V P K I R L F T R V T H L

J P L H V X K P V N H R I T I S E I

Z Q S K I Z P F I N S O X B U D P G

N Z R Z Y A R T C D N S O T O B X R

J U T I J X Y T I Y S T J X S P E W

U N J B F X B M N Y K E H M J I C S

C H F Q J K P J I O P R F C U M Q U

S U O Q R U B W T U K H Z Q P G X F

H N L J N H B N Y I L O K V Z J S T

A E E U U Y T H N X G S T F K K D H

K J Z F N O N X W W I E V H J L M X

Can you find these words?

DEFROSTER HOSE
HEATER CORE
FINS
OUTLET TUBES
VICINITY
DUCT
INLET TUBES
SOLDER

ACROSS/DOWN/DIAGONAL

HEATER CORE AND HOSES

ANSWER KEY

```
. . . . . . . . . . . . . . . . . S
. . . . . . . . . . . . . . . . E .
H E A T E R C O R E . . . . T B . .
. . . . . . . . U . . . . C U . . .
. . . . . . . . . T . . U T . . . .
. . . . . . . . . . L D T . . . . .
. . . . . . . S O L D E R . . . . .
. . . . . . . . . . L F T . . . . .
. . . . . . . . V N . R . T . . . .
. . . . . . . F I N S O . . U . . .
. . . . . . . . C . . S . . . B . .
. . . . . . . . I . . T . . . . E .
. . . . . . . . N . . E . . . . . S
. . . . . . . . I . . R . . . . . .
. . . . . . . . T . . H . . . . . .
. . . . . . . . Y . . O . . . . . .
. . . . . . . . . . . S . . . . . .
. . . . . . . . . . . E . . . . . .
```

HEATER CORE AND HOSES

XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	1	XX XX	XX XX	XX XX	XX XX	XX XX	2	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	3										XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	5	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	6													XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX		XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX		XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX
XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX

ACROSS:

3. lets hot water in (2 words)
6. joins duct work to wind shield duct (2 words)

DOWN:

1. within a specified area or location
2. lets water out to the cooling system (2 words)
4. vent
5. to join or patch with soft metal

HEATER CORE AND HOSES

ANSWER KEY

ACROSS:		DOWN:	
3.	INLETTUBES	1.	VICINITY
6.	DEFROSTERHOSE	2.	OUTLETTUBES
		4.	DUCT
		5.	SOLDER

```
V           O
I N L E T T U B E S   D
C           T         U
I           L     S   C
N         D E F R O S T E R H O S E
I           T     L
T           T     D
Y           U     E
            B     R
            E
            S
```